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PEABODY JOURNAL OF EDUCATION

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FINANCING A COMPREHENSIVE PROGRAM OF ELEMENTARY EDUCATION

HOWARD A. DAWSON
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Fundamental to the determining of the cost of a comprehensive program of elementary education is the need for knowing what constitutes such a program. That the raising of such a question is not mere academic tediousness may not be fully realized until a search is made for an acceptable description of the characteristics of an adequate school system as a basis for setting up a financial program. A quotation from a recent book by Dr. Fletcher Harper Swift gives a typical example of how the experts in school finance have attacked the problem.

"The most satisfactory way of determining the minimum program would be to set up certain standards as to the kind, quality, number and accessibility of the educational facilities to be included in this program. Shall our minimum program include high schools and kindergartens as well as elementary schools? Shall it include free textbooks, free lunches, and free transportation; and if so, under what circumstances? To what extent shall it include all-year supervision, Americanization classes, part-time classes, and supervised playgrounds? How many teachers and other school officers shall be provided? What qualifications shall be demanded and what salaries shall be paid? The foregoing questions suggest the scope and difficulties involved in determining the minimum program. . . .

"A less scientific but far simpler and therefore more practical method of determining the minimum program to be guaranteed and equalized by the state is to set up a standard of expenditure per pupil in average daily attendance

AUTHOR'S NOTE.—The preliminary work for this article was done in co-operation with James W. Cammack, Jr., Director of Research, State Department of Education, Kentucky. Some of the material in this article constitutes a part of a more complete report on the financing of elementary and secondary education, to be written by a committee of the Directors of Research of the State Departments of Education of the Southern States.
H. A. D.

and to compute for each district in the state, and then for the entire state, the cost of such an expenditure." (28:404-5.)

Thus the whole problem of expressing the cost of the educational program in terms of the quality of schools to be offered to children is passed over. The cost of the acceptable program is expressed in terms of flat sums of money per pupil or per teaching unit. Frequently complicated statistical procedures are used in the analysis of status as to the size of teaching units, and the typical cost of various educational units. All of such procedure is based on the assumption that average conditions as to the characteristics of the school system is a safe basis on which to set up a program of finance. If the practice were selected in such a way as to give data concerning school systems that have desirable characteristics, the averages thus obtained might be safer guides in estimating the financial needs of the schools.

One of the chief problems facing educational leaders in obtaining adequate financial support for a program of equalizing educational opportunities is to get persons in positions of political and economic leadership to recognize and accept the aspects and characteristics of an adequate and comprehensive program of public education. What is needed before a statement of the per capita cost of the proposed program is a statement of the principles upon which a program is to be projected and a description of the school system that will carry out the principles set forth. Until there is some agreement as to the kind of schools desired, there is little need to discuss costs. The work of the educational philosophers, of the supervisors and administrators, and of the teachers is needed to set up the characteristics of the comprehensive program. With these specifications before him the expert in finance can then do his work.

It seems appropriate, therefore, to set forth the purposes of a state supported system of public education on the elementary level; to state the functions of the elementary school system; and to describe the tangible aspects and characteristics of a comprehensive program of elementary education, especially those aspects that have direct bearing on the cost of the program. These statements will be made as tentative, with the full realization that they should be made by a widely representative committee of the leading authorities in the field of public education rather than by one individual. They probably represent accurately the conclusions of the research studies bearing upon the topics covered, and the opinions of the authors of the best literature on the subject.

THE PURPOSES OF A STATE SUPPORTED SCHOOL SYSTEM ON THE ELEMENTARY LEVEL

The chief purposes of a state-supported system of public education are political, economic, and individual. (19:3.) The purpose is political in that a government founded on democratic principles must see that its citizens

possess the necessary knowledge, attitude, and will to perform effectively the functions of citizenship. Considered in this way the public schools are the agencies through which the democratic state undertakes to perpetuate itself. (24: 241-5.) It is economic. Wealth is produced by the application of human labor, skill, and intelligence to natural resources. Public school training increases the knowledge, skill, and adjustability of those persons who have its advantages and, therefore, increases their productive capacity, raises their standard of living, and thereby increases the supply of and the demand for services and material goods. (5: 234-62.) It is individual in that it proposes to improve the physical, mental, and moral well-being of the individuals who have its advantages. (5: 50-1.)

THE SPECIFIC FUNCTIONS OF THE ELEMENTARY SCHOOL

The elementary school should perform the following specific functions:

1. Bring together for educational purposes, regardless of social status and native endowment, all the children of the community and place them under the supervision of men and women carefully trained for their work of inducting these immature members into the life of modern society. (5: 402-35.)
2. Foster activities that will insure the acquisition by the pupils of those basic skills, habits, attitudes, dispositions, ideals, and powers required of all members of organized society. These activities consist largely of the elementary mastery of the language and number arts, and through them the reading, imaginative study, and appreciation of those human experiences which have found expression in history, geography, social science, literature, art, music, and philosophy. The activities fostered should be appropriated to the mental and physical development of the children taught. This calls for the recognition, not only of age levels, but ability levels for each age. It is now practically universally accepted that the elementary school should provide for approximately six years of training. (5: 402-35.)

THE ASPECTS AND CHARACTERISTICS OF A COMPREHENSIVE PROGRAM OF ELEMENTARY EDUCATION

To determine the cost of a satisfactory program of elementary education it is necessary to set up the tangible measures of the different aspects of the public school system which is to carry out the functions and purposes set forth above. These aspects will pertain to teachers, physical plant and equipment, the curriculum, materials and apparatus for instructional purposes, the length of school term, type of organization, pupil-teacher ratio, size of the school, transportation, and the supervision and administration of the school system. It would be possible to state general principles concerning each of these aspects and then set up tangible measures for carrying out these principles. For the sake of brevity, a statement of the general principles concerning each of these aspects will be largely omitted, and a statement of the tangible measures that seem to be the most widely accepted as a result of research and philosophic thinking will be presented.

Teachers.—All persons employed in the public school systems as teachers, supervisors, or administrators should be trained specifically to fulfill the responsibilities of the positions they hold. (24: 500, 516-18.) In the light of

the standards set up by most of the state departments of education, and in a very large majority of our city school systems, it appears that all classroom teachers in the elementary schools should have at least two years of professional training after graduating from a four-year high school; and that all principals should have three or more years teaching experience in addition to the minimum training. It is not difficult on philosophical grounds to defend a standard of four years of training for all elementary teachers, but from a standpoint of practical consideration it is likely that the universal standard of two years is all that can be required. There are two very good reasons for this. In the first place, the number of elementary teachers with two years training is not now sufficient to fill all the teaching positions. In the second place, because of the relatively low ability of many sections of the country to pay taxes, coupled with the inadequate taxing system, it is highly improbable that adequate salaries to pay for the greater amounts of training will be paid. (3: 347-49 and 23: 76-82.)

The salaries paid teachers will be determined to a large extent by the supply and demand for persons who have the qualifications to do the work required. As to what it is necessary to pay the teachers having the qualifications set forth above, we can rely somewhat on the statistics as to salaries. The average salary of Federal employees in 1928 was $1,863; the average earnings of wage earners was $1,220; and the average salary of teachers in consolidated schools was $1,060. (4: 274.) In Maryland and Louisana, which represent effective types of rural school organization among the southern states, the available statistics show that the average salaries of white elementary teachers were $1,150 and $983 respectively. (15: 73 and 14: 99.) In 1930-31 the average salary paid to elementary teachers in 440 cities of a population of 2,500 to 5,000 was $1,162. The median of the minimum salaries was $999, and the median of the maximum salaries was $1,411. Salaries in these cities in fifteen southern states ranged from $754 in Florida to $1,228 in Maryland, the median salary in the median state being $936. (20: 198.)

Dr. Nolen M. Irby of the Arkansas State Department of Education has shown that in Arkansas the minimum amount of money on which teachers can maintain acceptable standards of living and make a reasonable amount of professional progress is $1,200. (12: 131-4.)

The average salary of principals of rural elementary schools in the United States in 1925 was $1,965. (10: 46.) In Maryland it was $1,650 in 1929-30, and the median salary of fifteen southern states in 1925 was $1,630. (10: 46.) The average salary of elementary principals in 440 cities of a population of 2,500 to 5,000 is $1,409, the medians of the minimum and maximum salaries being $1,271 and $1,592 respectively. (3: 198-200.)

Summarizing all of these facts, it would seem that the minimum salary of the elementary school teacher should be not less than $1,200 annually, and that

salary should be placed on an annual basis, and not on a monthly basis. The salary of an elementary principal should be a minimum of $1,600 annually.

Physical Plant, Equipment, Apparatus, and Instructional Materials.—Every child should have the privilege of attending school, and each teacher the privilege of working in a school plant so designed as to facilitate educational activities and to promote health. The plant should be designed from a functional point of view, so as best to promote the physical, moral, and social welfare of the pupils and teachers, and so that the program of the school can best be carried out. The school plant should represent the best in architectural design, so that it can be looked upon with pride and respect in the community. The equipment should facilitate the carrying out of the educational activities and protect and encourage the health, safety, morals, and social well-being of the pupils and teachers. (9:24.) More specific description of the character of school buildings that will meet these standards are to be found in such publications as Dresslar & Pruett's *Rural Schoolhouses, School Grounds, and Equipment.* (9 and 4:288-92.) The standards as to the school plant, including heating and sanitary facilities, are very definite and based upon scientific research, but an accurate description of the amount and kind of instructional supplies and equipment needed in the different types of classrooms is by no means so definite. Committees of principals, supervisors, and teachers of elementary schools need to work out standard lists of equipment, and estimations of the cost should be made. A typical example of this kind of work is that done by a committee in Alabama, headed by Dr. B. L. Parkinson, in working out a standard list of maps for different types of schools. The cost of a school plant is influenced considerably by its size. If the standards set forth in this paper for a minimum school of six teachers is accepted, the following units of cost appear to be adequate in the southern states to meet the approved conditions. (8:43.)

A building of six rooms with a small auditorium	$1,750 per room
A building of eight to twelve rooms	3,000 per room
A building of twelve rooms or more	4,500 per room
Permanent equipment	500 per room
Instructional supplies and apparatus	100 per room
Library facilities, an average of	100 per room

Permanent improvements are usually financed by bond issues. Assuming that this policy will be pursued and that the bonds will run from twenty to twenty-five years at an average interest rate of 5.5 per cent, the annual cost will be approximately $80.00 per $1,000.00 of contracted debt.

Practice in the most progressive school systems demands that free textbooks and instructional materials be furnished at public expense. (4:293.) A study of certain well-organized county school systems indicates that the annual cur-

rent per pupil cost of textbooks and instructional materials averages about $2.10. (15:77-8 and 14:40-1, and 132-3.)

Curriculum.—The curriculum should contain such courses of study and materials as will furnish all the aims and purposes of education as set forth in previous sections of this paper. In general the curriculum should contain subject matter and materials providing for instruction and training in health, civics, the tool subjects, worthy home membership, worthy use of leisure time, and an acquaintance with economic and vocational life in the modern world. 6:7; 4:256-61, and 5:195-367.) This statement is made here in connection with the financing of an elementary school because these aspects of a curriculum are essentials. It has become quite popular in some groups to undertake to eliminate many of these essentials from the elementary curriculum. Of course, if nothing but the three R's are to be taught considerable time might be saved and the cost of the elementary schools reduced accordingly. To illustrate the necessity of insisting on an adequate curriculum, the following quotation from Robert M. Hanes, President of the North Carolina Bankers Association, delivered at Chapel Hill, N. C., July, 1931, is presented:

> "There is a growing sentiment in the public mind today that our schools have added many fads and fancies that must be discarded as nonessential to the efficient operation of these schools and ineffective in the accomplishment of the real purposes for which our system of public instruction in North Carolina was established. Playground instruction, musical education, and extra-curricula courses are excellent things in themselves; they provide for the public schools advantages which heretofore have been available only in colleges and higher institutions of scholastic attainment. But the time has undoubtedly come when the cost of such luxuries must be borne directly by those who desire such training for their children and not paid for by taxes levied upon the people. The activities of those who conduct our schools must be concentrated on the first essentials of public instruction and many of the extras must be eliminated. Only in this way can the schools carry out the program of economy and increased efficiency which the Legislature has laid down for them." (11:13-16.)

It appears necessary for the school people themselves to state concisely what training the children are entitled to receive in the elementary schools, and resist with every power at their command the attempt of laymen who are interested chiefly in the reduction of taxes, to curtail the advantages to which the children are entitled.

Length of School Term.—Practices in our better school systems, as well as expert opinion of authorities are unanimously in favor of having school open at least thirty-six weeks each year. (22:193-99; 4:252, and 26:461.)

Types of Organization.—Trends as well as enlightened practices and modern studies of child development indicate that the most acceptable type of organization is the six-year elementary school. (22:177-183 and 26:448.) So far as the elementary school is concerned, its cost will be influenced by whether it is to be a six- or an eight-grade school. So far as the total cost of the public school system on elementary and secondary levels is concerned, if the schools were manned and equipped according to enlightened standards, the cost will

probably be affected by whether the elementary school is to terminate with the sixth grade or the eighth grade. (Junior high school instruction costs about 1.5 times as much per pupil as elementary instruction.)

Pupil-Teacher Ratio.—There is probably not any factor that will more greatly influence the cost of the school system than the accepted standard as to the number of pupils constituting a teaching unit. The statistics of our better city school systems, and in the states maintaining the county unit system, such as Louisiana and Maryland, as well as such experimental studies as have been conducted indicate that about thirty-five to forty pupils should constitute a teaching unit. The acceptable standard seems to be about forty enrolled pupils which will usually mean about thirty-five pupils in average daily attendance. Further experimentation and further development of the teaching technic may in all probability change this ratio in the future. It is highly probable that the teachers stand a better chance of increasing their salaries by becoming able more efficiently to handle a larger number of pupils than in any other way. (23: 92-98 and 25: 498.)

The Size of the School.—The size of the school system to be maintained need not of necessity affect the cost of the elementary program, but as a matter of fact it does. A high per capita cost of elementary education is frequently found in the schools of small enrollment. The most important reason for considering the size of the school, in connection with cost, is the consideration of the results that can be obtained for the money spent. Most of the published comparisons of educational results produced in large and small schools show that superior results are actually obtained in the large schools. (7: 19-23; 4: 240 and 8: 17-34.) It appears to be the consensus of opinion that the elementary school should have not less than six teachers, and should be so arranged that a teacher will not have more than one grade. In general the minimum size of the six-year elementary school should be from 200 to 250 pupils, with six classroom teachers.[1] (8: 37-8.) As to how much larger the school should be, there is no adequate experimental or other scientific data from which to set up criteria. So far as the rural school is concerned, the determining of the maximum size of the school is hardly a problem. Wherever the density of population will permit, it seems desirable to have a sufficient number of teaching units in the elementary school to justify maintaining a complete supervisory unit in one building. This will probably range from thirty to forty teachers. Such standards could hardly be practiced in rural areas.

Since the size of the school affects the cost and the results obtained for the money spent, it is a part of the work of establishing a satisfactory school program to determine where schools ought to be located, what the size of each school should be, and the number of schools, and the number of administrative

[1]Proceedings of the 14th Annual Conference of American Country Life Association Forum on Education. In print.

units that should be maintained. Legal provision for facilitating the closing, consolidating, and locating of schools, and the establishing of administrative units should be enacted. Examples of how this work can be done and results obtained are to be found in the recent county school survey work done in Arkansas and Alabama. (8:9-16 and 1:58-70.)

Transportation.—Wherever the establishment of schools meeting the standards described above causes the school building to be too far for the pupils to walk conveniently transportation should be provided at public expense. This is accepted as one of the necessary functions to be performed in the equalizing of the educational opportunities. (4:254 and 8:43-4.) In the southern states the reasonable standard seems to be that every child who lives more than two miles from the school building should be transported at public expense. The cost of transportation will average $22.50 per year per pupil transported. These figures are based on the expense in the school systems in Maryland and Louisiana for which the per pupil cost for transportation is $26.95 and $21.28 respectively. (15:80, 14:10 and 102-3.)

Supervision and Administration.—It is a well-accepted principle that provision should be made for the improvement of teachers through an adequate supervisory staff. In general there should be one supervisor to about every fifty teachers. (4:295-300 and 15:271-3.) It is difficult to determine a unit for school administration. In fact, no adequate criterion has been established. In general the unit of local school government should be sufficiently large to give a complete educational offering on the elementary and secondary school levels to all the children who are to be served by the unit. This unit may or may not be the county. (4:238-44, 8:35-40, 65-72; 13:20-23.) In most of the states the county usually more nearly constitutes an adequate unit of administration than any other existing political unit. Analysis of the functions to be performed and economy in the cost of providing necessary services indicates that a minimum of 150 teaching units should constitute an administrative unit.

Supervision and administration here are assumed to include the provision of health supervision, school attendance, and guidance work. (15:86.)

Each administrative unit should have as a minimum a superintendent, three supervisors, a health nurse, an attendance officer, and two full-time clerks.

The superintendent should have at least four years experience as a teacher and principal, and should have five years of college training, at least one of which should be professional training in school administration. The supervisors should have at least four years training above high school graduation and three or more years experience as classroom teacher. The health nurse should be a graduate public health nurse, including special training in public school nursing. The attendance officer should have at least two years training above the high school, including training in social case work.

The median salaries of the county superintendents in Maryland, Louisiana, North Carolina, and Arkansas, four southern states whose superintendents are selected by boards rather than by popular vote, may be taken as representative of salaries necessary to obtain the services of trained persons. These salaries are: Maryland and Louisiana, $3,600 each; North Carolina and Arkansas, $3,000 each. (15:268, 14:38-9 and 10:54.) The median salary paid to superintendents in 440 cities of a population of 2,500 to 5,000 is $3,565. (20:204.)

The median salary of county elementary supervisors in the United Stated is $2,412. (4:298.) In Maryland the average salary set up as a minimum by the state approximates $2,400. (15:268.) In Louisiana the average is about $2,000. (14:40-41.) In city systems (2,500 to 5,000 population) the salaries of elementary supervisors approximate an average of $2,000. (20:219.)

The best available statistics as to salaries of nurses and attendance officers applicable to the problem here are those concerning small city systems. The average salary of head nurses is about $1,500 and of attendance officers about $1,200. (20:218.) On the basis of the data presented the minimum salaries and expenses of persons in administrative and supervisory positions may be set up as follows:

Superintendent's salary	$ 3,600
Three supervisors' salaries at $2,400	7,200
Nurse's salary	1,500
Attendance officer's salary	1,200
Two clerks' salaries at $1,200	2,400
Travel and other expenses, including that of the school board	3,450
Total salaries and expense	$19,350

Using 150 teaching units as the minimum unit of administration and supervision and counting the salaries of the superintendent, the attendance officer, and one clerk, and their expenses, and the board as general control, the salaries and expense of the nurse as auxiliary agencies, these standards will give $51 per teaching unit for general control, $65 for supervision, and $13 for auxiliary agencies.

THE COST OF A COMPREHENSIVE PROGRAM OF ELEMENTARY EDUCATION

The functional analysis of the elementary school program presented gives a basis for stating the total cost of the program for each teaching unit. This cost will be stated in terms of a teaching unit of 40 enrolled elementary pupils in a school having at least six teachers and operating as a part of an administrative unit of at least 150 teaching units. Table I shows the estimated costs

arrived at and the percentage distribution of total cost and a comparison of this distribution with certain selected standards.

TABLE I

ANNUAL COST PER TEACHING UNIT OF EACH OF THE MAJOR FUNCTIONS OF A COMPREHENSIVE ELEMENTARY SCHOOL, AND THE PERCENTAGE DISTRIBUTION OF THESE COSTS

FUNCTION	Cost Per Teaching Unit	PERCENTAGE DISTRIBUTION				
		Of Estimated Costs		Selected Standards*		
		Including Transportation	Excluding Transportation	(1) Louisiana Parishes	(2) Maryland Counties	(3) Cities 10,000 to 30,000
1. General Control (Adm.)	$ 51	2.3%	3.0%	4.0%	3.4%	5.5%
2. Instruction—						
Teachers' salaries	1200					
Allotment of Prin. sal.	67	64.4	80.9%	71.0%	77.2%	73.1%
Allotment of Super. sal. and expense	65					
Textbooks and supplies	85					
3. Operation of plant	137	6.2%	7.8%	6.0%	7.3%	12.2%
4. Maintenance of plant	65	3.0%	3.7%	4.5%	3.3%	3.5%
5. Auxiliary Agencies—						
Transportation	450	22.7%	2.9%	13.0%	7.2%	3.5%
Other	50					
6. Fixed charges	30	1.4%	1.7%	1.5%	1.6%	2.2%
Total annual current cost	$2200			(1) 14:62-3		
Debt Service for Permanent Investment	200	8.3%		(2) 15:232		
Grand total cost	$2400			(3) 25:504		

*These percentages are based on elementary and high schools combined.

In the above table the estimates for general control, teachers' salaries, the allotment of supervisors' salary and expense, textbooks, and supplies have been sufficiently explained in preceding paragraphs. The other items need some further explanation. The principal here is assumed to be a teaching principal and the difference of $400 between his salary and that of a teacher is allotted equally to each of the six teaching units. Operation of the plant, maintenance of the plant, and fixed charges are estimated approximately in accordance with the relationship the total cost of these functions bears to the total cost of instruction in Maryland counties and Louisiana parishes. Other expense of auxiliary agencies includes health service, school libraries, and com-

munity activities, playgrounds and the like. This item includes $13 previously estimated for health service; the remainder is estimated on the basis of the per pupil amount spent for such items in Maryland counties and Louisiana parishes. It is assumed that one-half of the pupils will have to be transported at public expense. At $22.50 per pupil the amount will be $450. This assumption is based on the statistics of Louisiana parishes that have fairly completely consolidated systems and on the results of surveys made in each county of Arkansas. Such an assumption will probably hold good in most of the southern states. Debt service is based on capital outlay of $24.50 per teaching unit, and $80 annually per $1,000 to pay for this investment.

Certain variations in the estimations shown might take place. If the school were to have twelve teachers or more, about $200 per teaching unit would have to be added to the estimations shown for debt service. If the school were so located that transportation would not be necessary, the cost of this item could be eliminated entirely—a situation that will not occur for very large parts of the southern states.

The percentage of distribution of the estimated costs and the percentage distributions in Maryland and Louisiana and city systems are presented as a method of checking the reliability of distribution of the estimated cost. There are no material variations that cannot be satisfactorily accounted for.

Per Capita Costs.—It will be of interest to know how the cost of the proposed elementary school program compares with the cost in certain representative systems, and with the cost of education on the secondary and college levels. For this purpose Tables II and III are presented.

TABLE II

COMPARISONS OF PER CAPITA COSTS OF ELEMENTARY SCHOOLS AS PROPOSED, WITH PER CAPITA COSTS IN REPRESENTATIVE SITUATIONS ON ALL LEVELS OF INSTRUCTION, CURRENT EXPENSES ONLY

	Elementary	Junior High	Senior & Regular High	Junior College	Normal School	Teachers College
Proposed	$55.00					
Maryland—white (1)	51.85		$ 97.85		$268.00	
Louisiana—white (2)	52.03		114.91			$268.88
Cities, 10,000 population and above (3)	67.66	$ 89.58	121.29	$174.68	237.39	
State Systems (4)	65.87(5)		139.95(6)		297.74(7)	265.38(7)

(1) Based on average number belonging, 15: 75, 235, 153, 299.
(2) Based on average daily attendance, 14: 107, 152.
(3) Based on average daily attendance, 25: 498.
(4) Based on average daily attendance, 26: 488.
(5) Average per pupil attending in 16 states, 26: 488.
(6) Average per pupil attending in 15 states, 26: 488.
(7) 27: 890.

TABLE III

RATIOS OF PER PUPIL COST OF EDUCATION ON THE VARIOUS LEVELS

	Elementary	Junior High	Senior & Regular High	Junior College	Teachers College
Maryland	1		1.89		5.18
Louisiana	1		2.20		4.36
Cities 10,000 population and above	1	1.32	1.80	2.58	3.50
State Systems	1	1	2.12	1	4.50
Most probable ratio to expect (to nearest .5)	1	1.5	2	2.5	4.50

These tables show that the estimated cost is in keeping with the cost of representative systems, being approximately the same as Maryland and Louisiana, and about twenty per cent less than the cost in city systems. The ratio between per pupil elementary school cost and the costs on other levels is approximately as follows: Elementary, 1; junior high school, 1.5; senior high school and regular four-year nigh school, 2; junior college, 2.5; normal and teachers college, 4.5.

TABLE IV

ADDITIONAL ANNUAL EXPENDITURES FOR CURRENT EXPENSES AND DEBT SERVICE REQUIRED TO BRING ELEVEN SOUTHERN STATES UP TO STANDARD ELEMENTARY SCHOOL CONDITIONS, ALSO ENROLLMENT AND EXPENDITURES PER ELEMENTARY PUPIL FOR CURRENT EXPENSES AND DEBT SERVICE, 1929-30, WHITE AND NEGRO SEPARATELY (DATA DERIVED FROM REF. 16, 26)

States	Elementary Enrollment		Expend. per Ele. Pupil for Cur. Exps. & Debt Service, 1929-30		Additional Expense Required by the Proposed Standard		
	White	Negro	White	Negro	White	Negro	Total
Alabama	398,799	189,453	$32.65	$ 9.82	$10,360,153	$ 9,506,752	$ 19,866,905
Arkansas	331,595	108,877	34.69	12.75	8,392,669	5,144,438	13,537,107
Florida	218,002	88,035	50.07	14.14	2,164,760	4,038,165	6,202,925
Georgia	401,321	240,824	29.11	6.63	16,410,016	12,853,777	29,262,973
Louisiana	233,179	149,091	58.36	16.07	382,414	6,549,568	6,931,982
Maryland	193,013	48,186	56.63	40.41	650,454	943,964	1,594,418
Mississippi	268,329	286,230	39.50	5.38	5,500,745	15,633,883	21,134,628
No. Carolina	504,888	248,591	40.61	15.04	9,789,778	11,176,651	20,966,429
Oklahoma	536,317	45,259	38.31	32.17	11,632,716	1,259,558	12,892,274
So. Carolina	203,111	209,743	50.75	7.60	1,980,332	10,990,533	12,970,865
Texas	903,757	187,744	41.08	14.85	17,099,082	8,476,642	25,575,724
Totals and Averages for totals	4,172,331	1,802,033	$40.93	$12.13	$84,363,119	$86,572,931	$170,936,050

Total current expenses and debt service for elementary schools, 1929-30, eleven states

White	$170,772,689
Negro	21,858,660
Total	$192,631,349

EFFECT OF PROPOSED PROGRAM ON EXPENDITURES

The question arises as to what will be the effect of the application of the costs set up to the school systems of the southern states. Information has been tabulated to show additional expenditures that would have to be made in the elementary schools of each of the eleven southern states, if these standards were to be put into practice. These facts are shown in Table IV. In arriving at the additional expenses to be incurred as shown in Table IV the standard of $60 per elementary pupil, including the cost of providing school property, has been used. From this amount the per capita expenditure for white and Negro schools was subtracted, and the difference multiplied by the enrollment.

From Table IV it will be seen that for the elementary schools in the southern states additional expenditures of more than $84,000,000 would be required to bring the white schools up to the proposed standard, and $86,500,000 to bring the Negro schools up to this standard, making a total of approximately $171,000,000 additional expenses for these states. Data for Tennessee, Virginia, and Kentucky were not available. It would probably require an additional $30,000,000 for these states, which would bring the grand total of additional expense to $200,000,000. If the white schools in the fourteen southern states were to be brought up to this standard and the Negro schools up to the present standard of the white schools, it would require approximately $150,000,000 annual additional expense.

An analysis of the comparative statistics concerning wealth and income in the southern states does not encourage the opinion that the southern states will or can make such increases for the support of schools. It seems highly probable that if anything like acceptable elementary school advantages are to be given to all the children in most of the southern states it will be done through Federal participation in the support of the schools on the elementary level.

HOW THE PROGRAM SHOULD BE FINANCED

It is one of the functions of the state to set up a minimum standard of educational opportunity that shall be made available to every child in the state. The only way for the state to see that all its children have the type of advantages required is for the state to pay the entire cost of the minimum program. (18:25 and 28:406.) This simply means that the wealth of all the state is to be taxed and the money spent for the education of all the children without regard to the particular locality from which the revenues are collected. If there are not sufficient funds within the state to do more than pay for the minimum program, then only the minimum program should be permitted in any locality. If there is more than sufficient taxpaying ability in the state to pay for the minimum program, it seems well to permit all communities that do not exhaust their taxpaying ability in the support of the state-wide minimum program to vote additional local taxes to enable them to pay for schools that excell the minimum program required by the state. (28:408.) This per-

mission will allow variation and experimentation, and make for progress, all of which seems to be ample justification for permitting the levying of local taxes for school support.

No attempt is here made to go into the sources of revenue from which the educational program can be supported. The finding of sources is a part of the general problem of taxation, and should be worked out as a part of the entire state budget. It is probable, however, that unless the political authorities of the state show some willingness to take the school men into their councils in working out a program of taxation that the school men will be compelled to continue the policy of advocating special tax measures for the support of the public school system.

SUMMARY

In order to determine the cost of a comprehensive program of elementary education it is necessary to set up the general purposes of public education and the specific aims of the elementary school and in the light of these to describe the tangible aspects and characteristics of an elementary school system that will carry out the purposes and aims set up. These specific and tangible aspects and characteristics will determine the factors in the cost of a satisfactory program. The chief purposes of a state-supported system of public education are political, economic, and individual.

The specific aim of the elementary school is to give universal training in those basic skills, attitudes, dispositions, ideals, and powers required of all members of organized society.

The tangible aspects and characteristics of an elementary program are to be stated in terms of teachers, physical plant, equipment, apparatus and materials, curriculum, length of term, type of school organization, pupil-teacher ratio, size of the school, transportation of pupils, supervision and administration. The functional analysis of each of these aspects has been made and cost standards for each set up. A comprehensive program as defined calls for a school with at least six teaching units composed of approximately forty enrolled pupils each, which school is a part of an administrative and supervisory unit of at least 150 teachers, which unit provides a superintendent, three supervisors, an attendance officer, and a health unit.

Acceptable standards of cost for each teaching unit in a comprehensive elementary school program are set up as follows: General control, $51; teachers' salaries, $1,200; allotment of principal's salary, $67; allotment of supervisors' salaries, $65; textbooks and supplies, $85; operation of plant, $137; maintenance of plant, $65; transportation, $450; other auxiliary agencies, $50; fixed charges, $30; debt service for permanent investment, $200; or a total cost of $2,200 for current expenses, and a grand total of $2,400 for all expenses.

These costs compare favorably with the costs in certain well-organized county school systems, and are less than those found in city school systems in the United States. The most probable ratio of elementary school costs to costs in other levels of education is as follows: Elementary schools, 1; junior high schools, 1.5; senior high and regular high schools, 2; junior colleges, 2.5; and normal and teachers colleges, 4.5.

The application of this standard to the southern states will in half of them increase the cost of public education by from fifty to one hundred per cent, and in the fourteen southern states would probably involve an additional expenditure of at least $150,000,000 annually. There is not much likelihood that this additional expenditure can or will be made without Federal participation in the support of public schools.

The entire cost of a minimum program of education should be paid by the state. After this is done, if the taxing power of the most lucrative school units in the state has not been exhausted, such units should be permitted to levy additional taxes for the purpose of excelling the minimum program.

BIBLIOGRAPHY

1. Alabama State Department of Education Annual Report, 1930.
2. Barrows, Alice, *Changing of Conceptions of the School Building Problem.* Office of Education Bulletin, 1930, No. 16. Biennial Survey of Education, 1926-28. Washington, D. C., Chapter XVII, pp. 383-402.
3. Buckingham, R. B., et al., *Teacher Demand and Supply.* Research Bulletin of the National Education Association. Vol. IX, No. 5, 1931. Washington, D. C., pp. 307-407.
4. Carr, Wm. G., *The Outlook for Rural Education.* Research Bulletin of the National Education Association. Vol. IX, No. 5, 1931. Washington, D. C., pp. 231-302.
5. Chapman, J. Crosby, and Counts, George S., *Principles of Education,* 1924, Houghton Mifflin Company, 645 p.
6. Conway, Wm. L., Tyler, Ralph W., Harap, Henry, *The Curriculum,* Review of Educational Research. Vol. I, No. 1, 1931. American Educational Research Association, Washington, D. C.
7. Covert, Timon, *Educational Achievements of One-Teacher and of Larger Rural Schools,* Bureau of Education Bulletin, 1928, No. 15, Washington, D. C., 23 p.
8. Dawson, Howard A., and Little, Harry A., *Financial and Administrative Needs of the Public Schools of Arkansas,* Vol. I. State Department of Education, Little Rock, Arkansas, 1930, 100 p.
9. Dresslar, Fletcher B., and Pruett, Haskell, *Rural Schoolhouses, School Grounds, and Their Equipment.* Office of Education Bulletin, 1930, No. 21. Washington, D. C., 427 pp.
10. Gaunnitz, W. H., *Salaries and Salary Trends of Teachers in Rural Schools,* Bureau of Education Bulletin, 1929, No. 6, Washington, D. C., 54 p.
11. Hanes, Robert M., *What Business Expects of the Public Schools,* Proceedings of the Seventh Annual North Carolina Conference on Elementary Education, Educational Publication No. 62, State Department of Education, Raleigh, N. C., 1932, pp. 13-16.
12. Irby, Nolen M., *A Program for Equalization of Educational Opportunities in the State of Arkansas.* Peabody Contributions to Education, No. 83, 1930, Peabody College for Teachers, Nashville, Tenn.

13. Lee, Charles A., *Financing Education in Missouri*, 1929. State Department of Education, Jefferson City, Mo., 330 p.

14. Louisiana State Department of Education, *Eighty-first Annual Report*, 1929-30. Baton Rouge, La.

15. Maryland State Department of Education, *Sixty-third Annual Report of the State Board of Education*, 1929. Baltimore, Md.

16. McCuistion, Fred, *Financing Schools in the South*, 1930. Proceeding of Committee on Problems and Studies, Directors of Educational Research of the Southern States. 502 Cotton States Building, Nashville, Tenn.

17. Morrison, H. C., *Financing the Public School System*. Educational Record, July, 1931.

18. Mort, Paul R., *State Support for Public Schools*, 1926. Bureau of Publications, Teachers College, Columbia University, New York City, N. Y., 104 p.

19. National Industrial Conference Board, *Education and the Adjustment of Youth to Life*. New York, 1929, 61 p.

20. Norton, John K., *Salaries in City School Systems*, 1930-31. Research Bulletin of the National Education Association, Vol. IX, No. 3, 1931. Washington, D. C., pp. 163, 227.

21. Parkinson, B. L., et al, *Alabama State Approved Maps and Map Equipment for Elementary Schools*, 1931. State Department of Education, Montgomery, Ala.

22. Rankin, Paul T., Reaves, W. C., and Coxe, W. W., *School Organization*, Review of Educational Research, Vol. I, No. 3, 1931. American Educational Research Association, Washington, D. C., pp. 161-244.

23. Russell, L. C. B., Peterson, E. T., and Anderson, Earl W., *Teacher Personnel*, Review of Educational Research, Vol. I, No. 2, 1931. American Education Research Association, Washington, D. C., pp. 65-160.

24. Smith, Walter R., *Principles of Educational Sociology*, 1928. Houghton Mifflin Company.

25. *Statistics of City School Systems*, 1927-28. Office of Education Bulletin, No. 16. Biennial Survey, 1926-28. Chapter XXI. Washington, D. C., pp. 497-690.

26. *Statistics of State School Systems*, 1927-28. Office of Education Bulletin, 1930, No. 16. Biennial Survey, 1926-28, Chapter XX. Washington, D. C., pp. 439-496.

27. *Statistics of Teachers Colleges, and Normal Schools*, 1927-28, Office of Education Bulletin, 1930, No. 16, Biennial Survey of Education, 1926-28, Chapter XXIII. Washington, D. C., pp. 885-956.

28. Swift, Fletcher Harper, *Federal and State Policies in Public School Finance in the United States*, 1931, Ginn & Company, 472 p.

29. Turner, H. L., *Tentative Standards for the Distribution of Expenditures in County School Systems in the South*, Peabody College for Teachers Contribution to Education, No. 52, 1929.

RESEARCH ACTIVITIES OF THE HIGH SCHOOL PRINCIPAL

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Periodicals of Educational Research, Educational Research Bureaus within the Universities, within State Departments of Education, and within City School Systems, together with Educational Investigations within the Personnel Divisions of Industrial Organization are in general the development and in most instances the creation of the twentieth century. Their rapid increase indicates the growing emphasis upon the scientific solution of educational problems. Since the effectiveness and the practical application of the results of this research are dependent upon the actual leaders in the school themselves, new requirements are placed upon school administrators and teachers.

If educational research is to have a value comparable to the effort expended, school administrators must understand its significance. Co-operation in a movement that is not fully comprehended will be irksome to the administrator and of slight benefit to the research worker.

In order to read educational periodicals and to understand the discussions at educational gatherings, the school administrator must have a fundamental supply of research knowledge. He must make correct interpretations from the masses of assembled data. There is no instance where the adage, "A little knowledge is a dangerous thing," is of more truth. The early misuse of intelligence tests is a familiar example of application without the necessary preliminary interpretations.

There are many school problems that require a scientific attack. The day of personal opinions founded on such unreliable items as experience, age, and custom is fighting a losing battle. The advance of science has brought too many "whys" and "hows" for tradition and the lazy reasoning of "I think it's so because I think it's so." We are beginning to expect a clear realization of and scientific attack upon the problems of education. While the larger questions may be attacked by the specialist from without, the urgency and importance of particular local problems demand some one within the personnel of the individual school capable of carrying to completion a scientific study.

As head of his local organization the problems of the school come to the attention of the principal. His is the opportunity to generalize upon the various reports from students, teachers, parents, and community and to formulate the actual problems suggested. The principal is the only official whose position gives him a view of his school as a whole and that familiarity

with all of its divisions which provides the necessary scope of information to define and evaluate research procedure.

The modern high school faculty comprises a group of specialists. Aside from their ability in their academic fields, these teachers are often students of education and possessed of definite training and interests in some specific educational field. By studying their individual qualifications and employing them in carrying on needed research, the busy high school principal would bring about the solution of numerous urgent problems which he alone could not investigate due to lack of time or of special training. Some of the wisest high school principals attempt to select in each teacher a person with the special needed qualifications for attacking some existing problem in their schools.

The many records and materials available to the secondary school principal give him special opportunities for research within his school and for co-operation in larger research studies. The values to the individual school, to the entire local system, to other school systems, and to the profession in general are to be considered in determining the types and extent of research activity entered upon.

MAJOR CONSIDERATIONS

Preparation.—Any person who is to participate in a highly specialized line of work needs specific preparation. The most accurate method of insuring a valuable product is to proceed only after having been well informed in the field of operation. For this reason the research scholar must fortify himself with a foreknowledge of three procedures: first, there are definite methods for different types of educational research and a knowledge of their use and correct application is absolutely necessary; second, scientific studies in education require a knowledge of educational statistics since practically all problems call for some statistical treatment; third, the final report and publication must be considered. A weakness in any one of the three procedures will diminish the values to be derived by either actually invalidating the results or lessening their availability. The publications to cover the field of research in education are quite sufficient and too readily available to require inclusion. Books written from the laboratory or handbook standpoint are more useful to the worker in the field.

While it is important to know of and own some worthwhile treatises of the field of educational research, this ownership does not insure even the initiation of the owner into a knowledge of their content. The many activities required of the high school principal may repress any thorough study of research methods. It is probably advisable to take a summer away from home and school to obtain the necessary orientation. Most university summer schools offer courses in Educational Statistics, Methods of Research, and The Reporting of Research. The initial courses in these subjects could be completed during the summer and would furnish the information so necessary for the

more purposeful and useful guidance of the research being carried on within our secondary schools.

Another method of preparation is offered by the extension school. While better instruction, more time, and a better atmosphere for study may prevail at the university, the extension course has some advantages as supplementary to or a continuation of the summer study. Many principals are glad to have an opportunity to learn with a group of their teachers and to discover the possibilities of the various individuals for contemplated research. Actual problems may be studied and "set ups" prepared for local studies.

Assisting Agencies.—The following agencies[1] offer assistance to research workers in various ways and to different degrees:

1. National Committee on Research in Secondary Education. Chairman, E. J. Ashbaugh, Miami University; secretary, C. A. Jessen, Office of Education, Washington, D. C.

   This committee is composed of representatives of the leading agencies in the country dealing with secondary education. It works in co-operation with the United States Office of Education and is always ready to assist in promoting educational research by suggestion and advice and by actual co-operation.

2. National Educational Association, Research Department, W. G. Carr, Director of Research, 1201 Sixteenth Street, N. W., Washington, D. C.

   This department is constantly engaged in research in the entire field of education and stands ready to assist research workers to the limit of its facilities.

3. Bureaus of research in state departments of education.

   Wherever state departments of education have established bureaus of research, they can be relied on for assistance. In many cases where there is no bureau of research much help can be obtained by communicating with members of the staff who are specialists in the various fields.

4. Bureaus of research in city school systems.

   Many cities have now established bureaus or departments of research, in connection with their school systems. The directors of these bureaus are always ready to give friendly advice and criticism to research workers in cities where no research facilities are available.

5 Colleges and universities.

   The principal and teacher can usually rely upon professors of education and directors of research in universities and colleges to give needed advice and direction on various phases of research problems.

If one is within reach of these agencies, the personal conferences made possible are much to be desired. Workers in states where either the state university, department of education or both support a bureau of educational research will find the assistance to be obtained much worth while.

Procedure.—In planning the research work for his school the principal must employ all possible methods of consideration, for upon the original choice will depend the success of the research program over a considerable period of

[1] Cox, P. W. L., and others. An Outline of Methods of Research with Suggestions for High School Principals and Teachers. U. S. Bureau of Education, Bulletin, 1926, No. 24.

time. Four forms are offered to assure the maximum results from the general project.

The first form is simply a list of the fields in which, or the purposes for which, the principal would carry on research. Its purpose is to suggest research that is needed or to classify quickly the purposes of that research which is under consideration. It might also serve to give a better balance to the program by pointing out over emphasis upon any one field.

FORM I

FIELDS OF RESEARCH FOR THE HIGH SCHOOL PRINCIPAL

1. Increase Efficiency of Instruction.
2. Increase Efficiency of Administration.
3. Increase Efficiency of Janitorial Service.
4. Test New Methods of Instruction.
5. Test Plans of Organization.
6. Save Time.
7. Save Money.
8. Personnel Service.
9. Extra Curricular Effects.
10. Publicity Data.
11. Health Measures.
12. To secure better attendance.
13. To secure better discipline.
14. Community Relationships.
15. Special Educational Programs.

The second form is a five by eight filing card to be used for the primary evaluation of all the research problems under consideration. The card is for permanent record and of the most importance. Its use produces a short outline that will bring out the desirability of carrying out any project. A code number is recorded for reference when form four is used. Form two is to carry a red signal at the code number from the time it is filed as under study until the final report is made. The red signal is then displaced by a blue signal which remains until the results have been applied as far as possible; a green signal then displaces the blue.

FORM II

PRIMARY EVALUATION OF RESEARCH PROBLEMS FOR THE HIGH SCHOOL PRINCIPAL

CODE

Title _____

Urgency _____

Importance _____

Time a. Estimated Number of Hours _____

b. Date of Beginning _____ Date of Completion _____

Cost _____

Feasibility a. Appropriate Assistance.
b. Appropriate Set Up to Obtain Data.

Immediate Value _____

Form three was prepared by Mr. C. W. Hall of the Department of Educational Research of the Ohio State University. It is to be used in a comparative study of research problems when more are on hand after evaluation by form two than the principal can possibly put into operation. It is self explanatory as presented by Mr. Hall with a sample comparison worked out.[2]

Form four is for reports upon the progress of research which must be re-

[2]Hall, C. W., Comparing Research Problems, Educational Research Bulletin, Vol. IX, No. 12, p. 339-342.

quired of the various personnel to whom research duties have been delegated. This report keeps the problem before all concerned and hinders the discontinuances which can so easily occur in this type of work. Space is also provided for a record of two valuable results that can come at any time from a piece of research. The first is a record of other problems suggested. This will provide for the principal a continuous development of Form II files with valuable suggestions for future studies. The second space provides a record too often overlooked or neglected in research. Whenever any practical improvement is suggested by the study, this fact is reported to the principal. This procures an opportunity to provide for immediate functioning of the recommended improvement and prevents the loss of many worthwhile findings which would not be included in the final reports of problems in which the suggestions might appear as minor issues. This report is to be asked for at regular intervals until it is accompanied by the final report upon the study.

FORM IV

REPORT OF RESEARCH PROGRESS

Date: _____ Code: _____

Statement: _____

Estimated Date of Completion: _____

Related Problems Suggested: _____

Improvements in Any Phases of Present System Suggested.

Signed: _____

_____

_____

By the use of the above forms the formulation and selection of problems will be materially aided. Form four gives some assurance that the problem cannot be neglected without the knowledge of the principal and that related data will be forthcoming. However, there must be a definite plan of attack. After the problems have been selected and the assisting personnel chosen, the steps to be carried out in the solution must be definitely formulated. For this purpose texts dealing with educational research should be consulted. The final detailed provisions should be checked against form two and a new card substituted if correction is not feasible. The plan of procedure must be rewritten as each step is carried out to be sure that any variations or additions are on record for consideration in the final report.

With the study well planned, the solution seems mainly a matter of time. However, with a unique problem where little data is available to give direct aid in devising the attack, many unexpected obstacles may be encountered, and most research problems are unique. This will be very trying to the new worker, but the principal in his continued experience as director of the research in his school will be on the lookout for all obstructions that might hinder his program. Meeting situations with appropriate suggestions is one of the important functions of any director of research. A second danger from unforeseen hindrances

is a substitution of slipshod methods to hasten the program. The final value of a research study is as good as its weakest point. Thoroughness is necessary at every step and absolute honesty in every consideration.

While the value expected has been considered in the preliminary selection, the conclusions from the actual experiment can only be drawn with the completed data at hand. There will always be limitations of data and therefore limitations of conclusions. Good[3] discusses the drawing of conclusions quite simply and forcibly. A good criterion for the experimenter is that he report only the findings which he would be willing to defend before a group of experts.

In selecting problems for research the possible applications to be secured have been called for by Forms II and IV. This will help to accentuate application of results, the only real purpose of practical research. Moreover, if upon each Form II the green signal is substituted for the blue when the maximum application has been made of the completed study, each blue signal will serve as a constant reminder of such neglect.

CONCLUSION

The introduction of research in education and its necessity for the solution of educational problems demand a thorough knowledge of research procedure on the part of the high school principal. The principal's position gives him special opportunities to know the problems of his school and to use the special talent of his staff in studying these problems scientifically.

Books on research methods, educational statistics, and the reporting of research offer directions which must be familiar to the principal as research director. While the summer school with *ad interim* work offers the best research preparation for the school principal, extension courses can be arranged to furnish training for the entire research personnel of the school. Assisting agencies offer various aids to educational research.

A definite procedure is necessary to obtain worthwhile results from research. The forms suggested for use will aid in bringing about the desired (1) selection and evaluation, (2) formulation and outlining, and (3) scientific solutions of problems together with (4) the drawing of conclusions and (5) the complete application of the results obtained.

The high school principal after the correct preparation may assume the position of research director within his school. With his knowledge of the teaching personnel and the school's problems, with school records and reports readily available to his office, and with a definite method of procedure, the principal can direct a continuous research program that will be of inestimable value to his school and the entire field of education.

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[3]Good, Carter V., How to Do Research in Education. Baltimore: Warwick and York, 1928, p. 128-175.

WHAT DO RURAL TEACHERS READ?

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In this swift-moving age with its modern, high-powered printing presses turning out books, magazines, newspapers, and other publications at marvelous speed and in great quantities, it is assumed that every teacher reads. Granting this assumption, this very pertinent question is suggested: Are teachers reading professional literature or are they merely reading for pleasure?

A study covering the first half of the school year 1930-1931 throws some light on this question. This study was based on the replies of nearly one thousand teachers in sixteen southern states. These teachers were asked to list titles and authors of books, names of magazines, and other publications from which they had sought or received aid in teaching and school management during the period under consideration. The study was limited to white elementary teachers in the open country and in towns of 2,500 population or less. The co-operation of state departments of education and of county superintendents was secured in obtaining a fair sampling of teachers in each state from which replies were solicited.

Of the 978 teachers who returned usable replies, 9.4 per cent had less than a high school education; 14.5 per cent had a high school education with no work above high school; 20.2 per cent had one year above high school; 26.8 per cent had two years above high school; 19.4 per cent had more than two years above high school; and 9.7 per cent failed to report on this point.

The returns were fairly well distributed among different sizes of schools. Of those reporting, 25.3 per cent were teaching in one-teacher schools; 15.7 per cent in two-teacher schools; 7 per cent in three-teacher schools; 29.4 per cent in schools with from four to nine teachers; and 22.3 per cent in schools of ten or more teachers.

THE READING OF BOOKS

Five hundred eighty-two teachers, or 59.5 per cent of the entire number who returned usable replies, reported that they had read one or more books during this period. The average number of books read by these teachers was four. Seven hundred ninety different books were listed. Of this number 31 were mentioned by five or more teachers. The list, arranged in the order of number of times mentioned with the books listed by the largest number of teachers appearing first, follows:

The Classroom Teacher (12 volumes).
Pennel & Cusack—*How to Teach Reading.*
Bagley—*Classroom Management.*

The World Book (12 volumes).
Morton—*Teaching Arithmetic in the Primary Grades.*
Barnes—*Rural School Management.*
Stone—*Silent and Oral Reading.*
Avent—*Beginning Teaching.*
Sears—*Classroom Organization and Control.*
Germane & Germane—*Character Education.*
Rugg & Shumaker—*Child Centered School.*
Stone—*Teaching of Arithmetic.*
Mahoney—*Standards in English.*
Public School Methods (6 volumes).
Boyce—*Language Training.*
The Book of Knowledge (20 volumes).
Marshall—*The Story of Human Progress.*
Sheridan—*Speaking and Writing English.*
Branom—*Teaching of Geography.*
Smith—*One Hundred Ways of Teaching Silent Reading.*
Cooper—*How to Teach the Primary Grades.*
Kilpatrick—*Foundations of Method.*
Gates—*Improvement of Reading.*
Gates—*New Methods in Primary Reading.*
Troxwell—*Language and Literature in the Kindergarten and Primary Grades.*
Owen—*How I Did It.*
Osburn—*Corrective Arithmetic.*
Book—*Learning How to Study and Work Effectively.*
Pittman—*Successful Teaching in the Rural School.*
Morton—*Teaching Arithmetic in the Intermediate Grades.*
Wheat—*Teaching of Reading.*

This list of books makes a very respectable professional library.

A comparison of the reading of teachers in small[1] and large schools indicates that the small-school teachers read a fraction of a book more per teacher than did the large-school group.

MAGAZINE READING

These teachers were also asked to list the magazines from which they had sought or received aid. Of the 978 teachers whose replies were tabulated, 851, or 87 per cent, reported one or more magazines read. The average number of magazines read by these teachers was three.

The magazines listed by ten or more teachers, arranged in the order of number of times mentioned, the one mentioned by the largest number of teachers appearing first, are:

The Instructor (formerly *Normal Instructor and Primary Plans*).
The Grade Teacher.
State Education Association Journals (combination of eleven Journals).
The Journal of the National Education Association.
Child Life.
The Literary Digest.
The National Geographic Magazine.
American Childhood.
Hygeia.
The Progressive Teacher.
The American Magazine.
The Junior Home Magazine.
The Nature Magazine.

[1] A small school is here defined as one with from one to three teachers.

The School Arts Magazine.
Child Welfare.

The numbers of teachers listing *The Instructor* and *The Grade Teacher* greatly exceeded the number mentioning any other magazine. It is of interest that eleven of the twenty-six magazines mentioned by ten or more teachers are state educational association publications. *The Journal of the National Education Association* was mentioned almost half as many times as were all the state education association magazines combined. The data show that although the teachers of the small schools read a few more books than the teachers in the large schools, the large-school group reads more magazines.

THE READING OF OTHER PUBLICATIONS

The teachers were further asked to list any other publications from which they had sought or received aid in teaching or school management. Three hundred ninety-four teachers, or 40.3 per cent of the entire number, reported that they had made use of other publications of some kind. These publications for the sake of convenience were classified under twenty-four headings. Arranged in the order of number of times mentioned they are:

Bulletins, pamphlets, leaflets, folders, et cetera of commercial organizations and manufacturing concerns.
Miscellaneous pamphlets, bulletins, booklets, et cetera.
State bulletins not including health bulletins.
Current Events.
The Pathfinder.
Courses of study.
Government bulletins, not including health bulletins.
Health bulletins.
My Weekly Readers.
Publications of school supply houses.
Manuals.
Newspapers.
County and local school bulletins, circulars, letters, etc.
Travel folders and prospectuses.
Work books.
State Education Association publications other than the official magazines.
Geographic News Bulletin.
Rural School Bulletins.
News Outlines.
Intelligence and achievement tests.
National Education Association publications not including The Journal.
Advertising matter of chambers of commerce.
Plan books.
College bulletins.

A comparison was made of the reading of the three principal groups of publications by teachers in counties with and without rural supervisors. It was found that the teachers in counties with rural supervisors were reading a few more books and magazines and almost twice as many other publications as were the teachers in counties without supervisors.

SUMMARY

(1) Number of teachers reporting, 978.
(2) 59.5 per cent of these teachers had read an average of four books.
(3) 87 per cent had read an average of three books.
(4) 40.3 per cent had read an average of 3.4 other publications.
(5) 40.5 per cent had read no professional books.
(6) 13 per cent had read no professional magazines.
(7) 59.7 per cent had made no use of other publications.

CONCLUSIONS

The data of this study indicate that rural supervisors materially stimulate the reading of all three types of professional literature considered.

A survey of these lists of books, magazines, and other publications shows that rural teachers are reading good professional literature. However, a distressingly high percentage of teachers, 40.3, reported no books read, and an even higher percentage, 59.7, had made no use of other publications, many of which are free. There seems to be a great opportunity for the improvement of teaching through a wider use of professional literature.

TRENDS IN THE OFFERING OF OKLAHOMA HIGH SCHOOLS, 1921 TO 1931[1]

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What changes in our high school offering have come about in the past decade? A partial answer to this question may be found by bringing into comparison data included in two bulletins issued by the Oklahoma State Department of Education.[2] These bulletins give a statement of the exact number of standard units offered by each high school in each of the subjects. One bulletin is for the school year 1920-1921 and the other for the year 1930-1931.

Table I shows the number of schools teaching the various subjects. After each number is given the per cent, thus making comparisons more easy.

TABLE I[3]
OKLAHOMA HIGH SCHOOLS
(Exclusive of North Central Schools)
NUMBER OF SCHOOLS TEACHING DIFFERENT SUBJECTS
YEARS 1920-1921 AND 1930-1931

Subject	Year 1920-21		Year 1930-31	
	Schools	(Per Cent)	Schools	(Per Cent)
English	389	(100.0)	713	(100.0)
Public Speaking	50	(12.8)	283	(39.6)
Literary Activities	37	(09.5)		
Business English			81	(11.3)
Latin	314	(80.7)	149	(20.8)
French	87	(22.3)	21	(02.9)
Spanish	116	(29.8)	205	(28.7)
German	5	(01.2)		
History	382	(98.2)	703	(98.5)
Oklahoma History and Community Civics			628	(88.0)
Civics	237	(60.9)	93	(13.0)
Problems in Democracy			372	(52.1)
Economics	134	(34.4)	128	(17.9)
Sociology	49	(12.5)	173	(24.2)
Psychology	97	(24.9)	296	(41.5)

[1]A paper read at the annual meeting of the Oklahoma Academy of Science, Oklahoma Agricultural and Mechanical College, Stillwater, November 27, 1931.

[2]State Accredited High Schools of Oklahoma, Official Bulletin, June 1, 1921; and Annual High School Bulletin, No. 112-F, June 30, 1931.

[3]For similar tables covering years 1919-1924, see author's article, "The High School Curriculum As It Is," Peabody Journal of Education, Vol. IV, No. 4, pp. 218-224.

TABLE I—Continued

Subject	Year 1920-21		Year 1930-31	
	Schools	(Per Cent)	Schools	(Per Cent)
Algebra	389	(100.0)	706	(99.0)
Geometry	373	(95.8)	691	(96.9)
Trigonometry	10	(02.5)		
Arithmetic	223	(57.3)	362	(50.7)
Physics	171	(43.9)	140	(19.6)
Chemistry	26	(06.6)	32	(04.4)
Botany	118	(30.3)	7	(00.9)
Zoology	79	(20.3)	7	(00.9)
Physiology	85	(21.8)	82	(11.5)
Physical Geography	225	(57.8)	511	(71.6)
Biology			432	(60.5)
General Science	276	(70.9)	556	(77.9)
Agriculture	231	(59.3)	245	(34.3)
Home Economics	219	(56.2)	280	(39.2)
Manual Training	109	(28.0)	63	(08.8)
Drawing	68	(17.4)	17	(02.3)
Art	13	(03.3)		
Music	94	(24.1)	108	(15.1)
Commercial Law	77	(19.7)	131	(18.3)
Commercial Geography	150	(38.5)	464	(65.0)
Bookkeeping	140	(35.9)	85	(11.9)
Shorthand	66	(16.9)	79	(11.0)
Typewriting			102	(14.3)
Methods and Review	55	(14.1)		
Physical Education	40	(10.2)		
No. Schools Included	389	(86.6)	713	(86.6)
North Central Schools Not Included	54	(12.0)	110	(13.3)
Schools Not Reporting	6	(01.3)		

In 1920-21 there were 389 accredited[4] high schools, exclusive of 54 North Central schools and 6 schools not reporting. Ten years later there were 713 accredited schools, exclusive of 110 North Central schools. Thus, the data upon which the tables are built include 86 per cent of the high schools of the state, both in 1920-21 and in 1930-31.

Subjects which are accredited a decade ago but are no longer given credit are Literary Activities, German, Trigonometry, Art, Methods and Reviews, and Physical Education. Subjects now accredited but not mentioned ten years

[4]In Oklahoma the High School Inspection Division of the State Department of Education annually accredits high schools for specific units.

ago are Business English, Oklahoma History, and Community Civics, Biology, and Typewriting.

The only subject taught in all high schools of Oklahoma ten years ago and now is English. Public Speaking is now taught in nearly 40 per cent of the high schools. Latin was taught in 80 per cent of the schools and now it is taught in but 20. French has dropped from 22 per cent to less than 3, while Spanish has remained about constant at 29 per cent. History is taught in 98 per cent of the schools, Oklahoma History and Community Civics in 88 per cent; Civics has dropped from 60 per cent to 13, but Problems in Democracy is taught in more than half of the schools. While Economics has dropped from 34 per cent to 17, Sociology and Psychology have increased. The mathematical subjects have remained pretty constant, Algebra and Geometry being taught in nearly all high schools.

Physics and Chemistry have fallen off, and also Botany, Zoology, and Physiology. Physical Geography, Biology and General Science have increased. Agriculture, Home Economics, and Manual Training have decreased; also Drawing, Art, and Music. Commercial Law remains about the same, but Commercial Geography shows an increase from 38 per cent to 65. Although Bookkeeping and Shorthand have fallen off, Typewriting has increased.

While Table I deals with the number of schools teaching the various subjects, Table II has to do with the number of units taught. Table I answers the question: How many schools teach the various subjects? Table II shows what per cent of the time is devoted to each subject.

TABLE II

OKLAHOMA HIGH SCHOOLS
(Exclusive of North Central Schools)
NUMBER OF ACCREDITED UNITS IN DIFFERENT SUBJECTS,
TOGETHER WITH PER CENT EACH SUBJECT IS OF WHOLE CURRICULUM,
YEARS 1920-21 AND 1930-31

Subject	Year 1920-21		Year 1930-31	
	Units	(Per Cent)	Units	(Per Cent)
English	1,375	(19.36)	2,584	(22.70)
Public Speaking	26½	(00.37)	370	(03.25)
Literary Activities	19	(00.26)		
Business English			40½	(00.35)
Latin	677	(09.54)	272	(02.39)
French	153	(02.15)	30	(00.26)
Spanish	193	(02.71)	320	(02.81)
German	9	(00.12)		
History	1,229	(17.30)	1,629	(14.31)
Oklahoma History and Community Civics			620½	(05.45)

TABLE II—Continued

Subject	Year 1920-21		Year 1930-31	
	Units	(Per Cent)	Units	(Per Cent)
Civics	118½	(01.66)	46½	(00.40)
Problems in Democracy			336	(02.95)
Economics	67½	(00.95)	64	(00.56)
Sociology	24½	(00.34)	86½	(00.76)
Psychology	50	(00.70)	148½	(01.30)
Algebra	523½	(07.37)	880	(07.73)
Geometry	482	(06.78)	742	(06.52)
Trigonometry	5	(00.07)		
Arithmetic	111½	(01.28)	181½	(01.59)
Physics	170½	(02.40)	140	(01.23)
Chemistry	25½	(00.35)	32	(00.28)
Botany	69	(00.97)	3½	(00.03)
Zoology	43	(00.60)	3½	(00.03)
Physiology	43	(00.60)	42	(00.36)
Physical Geography	126	(01.77)	255½	(02.24)
Biology			432	(03.79)
General Science	274½	(03.86)	556	(04.88)
Agriculture	252	(03.54)	317½	(02.79)
Home Economics	339½	(04.78)	453	(03.98)
Manual Training	131	(01.84)	91½	(00.80)
Drawing	54½	(00.76)	18	(00.15)
Art	8½	(00.11)		
Music	122½	(01.72)	123½	(01.08)
Commercial Law	38½	(00.54)	65½	(00.57)
Commercial Geography	77½	(01.09)	232	(02.03)
Bookkeeping	94½	(01.33)	81½	(00.71)
Shorthand	81½	(01.14)	79	(00.69)
Typewriting			102	(00.89)
Methods and Reviews	62	(00.87)		
Physical Education	23½	(00.33)		
TOTAL	7,101	(99.56)	11,379	(99.86)
Average No. Units per School	18.25		15.95	
No. Schools Included	389	(86.6)	713	(86.6)
North Central Schools Not Included	54	(12.0)	110	(13.3)
Schools Not Reporting	6	(01.3)		

In 1920-21 the 389 accredited high schools offered a total of 7,101 units in thirty-five different subjects. In 1930-31 the 713 accredited high schools offered a total of 11,379 units in thirty-four different subjects.

English now makes up 22 per cent of the entire high school curriculum. If Public Speaking and Business English be added in, the three together total more than 26 per cent of all the curriculum. This is an increase of more than 5 per cent during the past ten years.

The four foreign languages, however, show a decline from a total of 14½ per cent to 5½, Spanish being the only foreign language which has not fallen off.

If the social studies (History, Oklahoma History and Community Civics, Civics, Problems in Democracy, Economics, Sociology, and Psychology) be taken as a group, the increase has been nearly five per cent (from .2095 to .2573). History, Civics, and Economics have fallen off, while Oklahoma History and Community Civics, Problems in Democracy, Sociology and Psychology, when taken together, show an increase of nearly 9½ per cent (from .0104 to .1046).

The English group and the social studies group together total more than half of the entire high school offering; i. e., 52 per cent. A decade ago they were less than 41 per cent.

Mathematics has remained constant, still furnishing 15 per cent of the curriculum, even as it did ten years ago. It is interesting to note that the social studies, together with English and mathematics, comprise more than two-thirds of the entire high school curriculum; i. e., 67 per cent.

The science group (Physics, Chemistry, Botany, Zoology, Physiology, Physical Geography, Biology, and General Science) shows an increase of two per cent (from .1055 to .1284). This is due to increases in Physical Geography, Biology, and General Science, the other five sciences showing decreases.

Also, a slight increase is seen in the business subjects (Commercial Law, Commercial Geography, Bookkeeping, Shorthand, and Typewriting). A decade ago their total per cent was .0410, while in 1930-31 it was .0489.

A slight decline is seen in such vocational subjects as Agriculture, Home Economics, and Manual Training.

That the variety of subjects offered in the typical Oklahoma high school is less than it was a decade ago appears from a study of Table III.

While in 1920-21, 6 per cent of the schools offered a total of thirty or more units, in 1930-31, this was true of less than 1 per cent. Again, in 1920-21, 41 per cent offered 20 or more units, but in 1930-31, only 15 per cent did so. The average for all schools had dropped from 18.25 total units to 15.95. One would tend to conclude that Oklahoma high school students today had less variety of subjects from which to choose than they did ten years ago.

Such a conclusion, however, should be modified in the light of two facts. The increase in the number of North Central schools (from 54 to 110) has eliminated from the 1930-31 statistics many of the larger high schools of the state. Also, it should be noted that the number of small high schools has

TABLE III

TOTAL UNITS IN HIGH SCHOOLS
1920-21 AND 1930-31

	1920-21		1930-31	
	Schools	(Per Cent)	Schools	(Per Cent)
No. of Schools with 8 or less total units	37	(.095)	44	(.061)
No. of Schools with 12 or less total units	85	(.218)	149	(.208)
No. of Schools with 20 or more total units	160	(.411)	114	(.159)
No. of Schools with 30 or more total units	25	(.064)	5	(.007)
Number of schools included	389		713	
Total number of accredited units	7,101		11,379	
Average number of units per school	18.25		15.95	

greatly increased during the decade studied. The recent report of the State Superintendent of Public Instruction shows that between 1920 and 1930 the number of high schools offering sixteen or more units increased 52 per cent (from 301 to 458), while those offering nine to fifteen units increased 220 per cent (from 70 to 294). "There are nearly five times as many high schools in Oklahoma in 1930 as there were fourteen years ago," states this report. "The small three- and four-year high schools, those accredited for nine to fifteen units, have increased fourteen times (from 21 to 294) since 1916. It is evident that there is an accredited high school accessible to practically every boy and girl in the state."[5]

Do not the facts brought out in this study indicate that the tendency is toward the more general courses, and the less expensive courses? A state study in California[6] showed that in high schools enrolling less than one hundred students the most expensive subjects are Mechanical Arts, Mechanical Drawing, Art, Home Economics, and Latin. All of these subjects have fallen off in Oklahoma high schools during the past decade. The same study showed that among least expensive subjects are English, Mathematics, History and Social Studies, and General Science. All of these subjects have increased in Oklahoma high schools during the past decade.

Is it not possible that the real influences working in the shaping of the high school offering are largely financial rather than educational? With a very definite maximum levy allowed by law and with a steadily increasing high-school enrollment, it is not at all strange that such should be the case. If the curriculum is to be determined by educational principles rather than economic necessity, then better methods of financing our public schools must be found.

[5]Thirteenth Biennial Report of the Superintendent of Public Instruction of the State of Oklahoma, 1930. Pp. 40-41.

[6]Report of the Committee of Fifteen of the California Teachers' Association on Secondary Education in 1923. Pp. 94-95.

THE RELATION OF ARITHMETICAL ABILITY TO ACHIEVEMENT IN ALGEBRA AND GEOMETRY

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Is there sufficient relation between ability in arithmetic and achievement in algebra and geometry, when other factors are approximately equal, to justify a comprehensive review-course in arithmetic immediately preceding the beginning study of algebra and geometry? School administrators and curriculum reconstructionists are frequently faced with this problem. Teachers of senior high school mathematics are asking if additional arithmetical ability would decrease the number of failures in high school mathematics.

The method of attacking this problem was of a twofold nature; namely, (a) an examination of the opinions of authorities and a review of the findings of related investigations, and (b) a testing program in the high school department of Sue Bennett College, London, Kentucky. To determine the opinions of authorities, books on the teaching of mathematics (especially arithmetic, algebra, and geometry) and books dealing with mathematical subjects from the psychological point of view were examined. From the periodical files were collected the more recent treatments of the subject, including reports of surveys and investigations having to do with the inter-relationships of the three subjects. Theses, monographs, and reports of related investigations were reviewed.

The testing program was begun with administering the *New Stanford Arithmetic Test, Form W*, and the *Detroit Advanced Intelligence Test, Form W*, to a class in beginning algebra and to a class in plane geometry several weeks after the opening of the first semester of school. The arithmetic test is divided into two parts, one measuring arithmetical reasoning and the other arithmetical computation. This test has a coefficient of reliability of .85. The intelligence test correlates .66 with the *Army Alpha, Form 9*, on 150 cases; .65 with the *Miller Mental Ability Test* on the same cases; and .74 with the composite of *Army Alpha* and *Miller* for the same 150 cases. These tests were given to secure an index of the arithmetical and intellectual abilities of the pupils concerned.

The *Columbia Research Bureau Algebra Test, Form IA*, was given to the algebra class, and the *Columbia Research Bureau Geometry Test, Form IA*, was given to the geometry class at the beginning of school before any algebraic

and geometric instruction was attempted. These tests were given to determine whether the pupils had any previously acquired abilities measured by these tests. These tests were administered again to the same groups at the end of the first semester to determine the achievement in the two subjects during the first semester. Since the content of the Algebra Test, Form IA, is limited to the work commonly done in the first semester, it provides a more valid measure than would a test of the same length embodying the whole year's work. The authors claim a coefficient of reliability of .92 for Form IA. Both forms, A and B, of the geometry tests are designed to cover, with one hundred items each, all the more important aspects of plane geometry. The reliability coefficient, as reported by the author, is .93. Form IIA of the same algebra and geometry tests was given at the end of the second semester to determine achievement during the second semester. Form IIA of the algebra test covers the entire first year of algebra and also is designed as a comprehensive test of algebraic manipulation and solution. The coefficient of reliability of this form is .86.

Thirteen algebra pupils and twenty-six geometry pupils took all the tests, practically twice this number having had several tests. Both groups were controlled in the following factors:

1. All pupils had approximately the same amount of conventional instruction in arithmetic.
2. Both groups were unselected.
3. All pupils were regularly enrolled in school.
4. Pupils entering the classes late and those repeating the subjects were not considered.
5. All pupils began their work at the same time and continued, under the instruction of the junior author, for nine months.
6. According to the opinion of the junior author, the amount of effort and study differed very little among the two groups. Since the tests at mid-term and at the end of the year were given as regular examinations from which the pupils' grades were partially derived, it is not likely that any one of them put forth less than his best effort.

OPINIONS OF AUTHORITIES

Birch: The advocates of this new method of organization base their claim on the obvious and important inter-relation between arithmetic, algebra, and geometry.[3]

Bresclich: The work in arithmetic, related to algebra and geometry, must be planned with care and kept up with systematic regularity.[5]

Hawks, Luby, and Touton: Constant reference has been made to arithmetic in explaining the various algebraic processes.[2]

Klapper: The child who knows the fundamentals of arithmetic . . . can grasp with greater ease the basic operations of algebra.[4]

Stamper: Arithmetic should prepare for further work in mathematics.[6]

Tripp: We are constantly substituting numbers for letters so as to emphasize the idea that algebra is generalized arithmetic.[4]

Ward: It matters little whether algebra is begun in the ninth year or in the tenth year, after an additional year of study in arithmetic.[7]

Young: Better results would doubtless be achieved by regarding geometry as the application of arithmetic to geometric forms and *vice versa*.[8]

Blackhurst: Algebra is fundamentally different from arithmetic.[9]

Everett: Algebra is more than the extension of arithmetic.[10]

Judd: It is not proper to speak of algebra as a chapter in arithmetic. Algebra takes up the processes and operations which are known to arithmetic in a form which is unknown to arithmetic.[11]

SUMMARY OF RELATED INVESTIGATIONS

Schreiber found that arithmetical ability had very little to do with algebraic ability, that errors in arithmetic and algebra had little in common, and that inferior arithmetical ability produced an unfavorable attitude toward algebra.[12]

Breslich concluded the following from an investigation at the University of Chicago:

> Pupils who study the new courses in general mathematics in grades seven and eight compare favorably in arithmetic with those who devote the entire time of mathematical classes to arithmetic alone.
> In addition and subtraction tests in algebra . . . ninth grade pupils who had taken the new course ranked about the same as the tenth grade pupils who had taken the conventional course. In multiplication and division tests the scores of the ninth grade pupils were slightly lower.
> In geometry the tenth grade classes who had taken the conventional course surpassed the ninth grade group in one division of the test, fell below in one division, and ranked the same in the remaining two divisions.[13]

Wattawa found that thirty-five per cent of the errors in mathematics were in simple arithmetic.[14] Hoge also found that among errors occurring in the study of algebra were a list of particular errors in arithmetic.[15]

Coit concluded that many difficulties in high school algebra were due to failure to understand simple arithmetical processes.[16]

McCuen found that the arithmetic division of the Terman Group Test of Mental Ability was not a good basis for grouping algebra pupils.[17] Burton concluded that probably the best method of grouping pupils in beginning algebra was a composite of a score on eighth grade arithmetic and the intelligence quotient.[18]

Courter found that arithmetic was not a factor in determining success in geometry.[19]

RELATION OF ARITHMETICAL ABILITY AND INTELLIGENCE TO ACHIEVEMENT IN ALGEBRA

The following formulas were used in correlating the scores:

$$\text{Simple Correlation } r = \frac{\Sigma XY}{\sqrt{\Sigma X^2} \cdot \sqrt{\Sigma Y^2}}$$

$$\text{Partial Correlation } r_{12\cdot 3} = \frac{r_{12} - r_{13}r_{23}}{\sqrt{1-r^2_{13}} \cdot \sqrt{1-r^2_{23}}}$$

$$\text{Multiple Correlation } r_{1(23)} = \sqrt{1 - \frac{\sigma^2_{1\cdot 23}}{\sigma_1{}^2}}$$

The simple correlation between arithmetical ability and intellectual ability among the algebra pupils is .71 ± .09. The relationship between arithmetic and algebra is as follows:

*Factors Correlated**	*r*	*P. E.*	*With Intelligence Constant*
Arithmetic and algebra I.....	.08	.18	—.27
Arithmetic and algebra II.....	.71	.09	.50
Arithmetic and algebra III.....	.75	.08	.69
Arithmetic and algebra II—I.....	.69	.09	.52
Arithmetic and algebra III—II.....	—.36	.16	.05

*Algebra I indicates algebra scores at beginning of school year.
Algebra II indicates algebra scores at end first semester.
Algebra III indicates algebra scores at end second semester.
Algebra II minus I indicates gain in algebra scores from beginning of school to end first semester.
Algebra III minus Algebra II indicates gain in algebra scores from end of first semester to end of second semester.

The unusually low coefficient between arithmetic and algebra I is due to the small scores made on the algebra test, given before any instruction in algebra was undertaken, indicating that the class began the study of algebra with practically no algebraic information. The low negative coefficient, with intelligence constant, may be accounted for in the same manner. The negative coefficient of .36 is due to the mean of the algebra III scores being less than the mean of the algebra II scores, the algebra III scores covering the entire field of first year algebra, while algebra II covers only the work of the first semester.

The relationship between intelligence and algebra is as follows:

Factors Correlated	*r*	*P. E.*	*With Arithmetic Constant*
Intelligence and algebra I.....	.36	.16	.44
Intelligence and algebra II	.60	.12	.20
Intelligence and algebra III.....	.45	.15	—.18
Intelligence and algebra II—I.....	.55	.13	.12
Intelligence and algebra III—II.....	—.55	.13	.45

The low coefficient of .36 and the negative .55 are due to the same factors as indicated for the first tabulation. The negative coefficient of .18 in the preceding tabulation indicates the significance of achievement in arithmetic in changing the relationship between intelligence and algebra III. It indicates that there is some arithmetical ability involved in intellectual and algebraic ability.

With the exceptions indicated, arithmetical ability and intelligence are either markedly or significantly related to achievement in algebra. The partial correlations support the conclusion that achievement in arithmetic and algebra is significantly dependent upon intelligence, and that arithmetical ability is closely related to intelligence and achievement in algebra.

However, the following tabulation of multiple coefficients, compared with zero order coefficients, indicates that arithmetical ability is as closely associated with achievement in algebra as is a combination of arithmetical ability and intelligence. One possible exception to such a relationship is with the

algebra I scores. However, it is believed that intelligence is a more significant factor than arithmetical ability in performance on an algebra test, when pupils have had no formal instruction in algebra.

	Arithmetical Ability	*Intelligence*	*Arithmetical Ability and Intelligence*
Algebra I	.08	.36	.45
Algebra II	.71	.60	.72
Algebra III	.75	.45	.76

RELATION OF ARITHMETICAL ABILITY AND INTELLIGENCE TO ACHIEVEMENT IN GEOMETRY

The simple correlation between arithmetical ability and intelligence among the geometry pupils is .50 ± .10. The relationship between arithmetic and geometry is as follows:

Factors Correlated	*r*	*P. E.*	*With Intelligence Constant*
Arithmetic and geometry I	.05	.13	.03
Arithmetic and geometry II	.30	.12	.19
Arithmetic and geometry III	.39	.11	.16
Arithmetic and geometry II — I	.27	.12	.04
Arithmetic and geometry III — II	.15	.13	.12

The scores in geometry I range from —6 to 10 with an average of 2.7. They represent scarcely any achievement at all in geometry prior to having received any geometric instruction. Scores ranging from 0 to —6, with a large number of pupils making no score at all, results in this unusually low coefficient of .05. The negligible coefficient of .15 indicates that arithmetical ability is not closely associated with achievement in the second semester of plane geometry.

The relation between intelligence and geometry is as follows:

Factors Correlated	*r*	*P. E.*	*With Arithmetic Constant*
Intelligence and geometry I	.04	.13	.02
Intelligence and geometry II	.53	.09	.16
Intelligence and geometry III	.54	.09	.43
Intelligence and geometry II — I	.48	.10	.41
Intelligence and geometry III — II	.09	.13	.13

The negligible coefficient of .04 can be accounted for in the same manner that the .05 was accounted for in the preceding paragraph. Again the coefficient of .09 indicates that intelligence is not closely associated with achievement in the second term of plane geometry.

With the exceptions indicated, the relationship between intelligence and achievement in geometry is more significant than the relationship between arithmetic and achievement in geometry. However, the coefficient is not high in any case. The partial correlations bring about sufficient change in the zero order coefficients to indicate that intelligence is a factor, although not unusually significant, in arithmetical ability and geometric achievement; also that

arithmetical ability is a factor in intelligence and geometric achievement, although not significant.

The following tabulation of multiple coefficients, compared with zero order coefficients, indicates that intelligence is as closely related, and in some cases more closely related, to achievement in geometry as a combination of arithmetical ability and intelligence. One possible exception to such relationship is in the case of geometry I. However, in no case is the coefficient high, or is the relationship significant. The general indications are that neither arithmetical ability, intelligence, nor a combination of the two bears a relationship worthy of consideration in predicting success in geometric achievement.

	Arithmetical Ability	*Intelligence*	*Arithmetical Ability and Intelligence*
Geometry I	.05	.04	.08
Geometry II	.30	.53	.33
Geometry III	.39	.54	.55

SUMMARY AND CONCLUSIONS

1. Authorities are not agreed as to the interdependence of arithmetical ability and achievement in algebra and geometry.

2. Related studies do not agree upon the extent to which achievement in algebra and geometry are dependent upon ability in arithmetic. However, such studies seem to indicate a certain degree of relationship between achievement in arithmetic and algebra. Proof of a positive relationship between arithmetical ability and achievement in geometry has not been established.

3. There is a significant relationship between arithmetical ability and achievement in algebra, and a less significant relationship between intelligence and achievement in algebra. Intelligence combined with arithmetical ability correlates no higher with achievement in geometry than does arithmetical ability alone.

4. Arithmetical ability does not correlate highly with achievement in geometry. Intelligence correlates more highly, but not significantly, with geometric achievement than does arithmetical ability. Intelligence combined with arithmetical ability correlates no higher with achievement in geometry than does arithmetical ability alone.

5. Intelligence is a factor involved in achievement in arithmetic, algebra, and geometry. However, it does not correlate as highly with achievement in algebra and geometry as does arithmetical ability.

6. The data suggest that an intensive review of the entire field of arithmetic should precede the beginning study of algebra. However, the data are too meager to warrant such as a recommendation.

REFERENCES CITED

[1]John J. Birch, "The Problem of Algebra Instruction," *Mathematics Teacher* (1927), *20*, 161.

[3]Ernst R. Breslich, *Problems in Teaching Secondary Mathematics*, 28-29. Chicago, University of Chicago Press, 1921.

[4]H. E. Hawks, W. A. Luby, and F. C. Touton, *First Course in Algebra*, iii. New York, Ginn and Company, 1909.

[5]Paul Klapper, *The Teaching of Arithmetic*, 11. New York, D. Appleton and Company, 1921.

[6]Alva Walker Stamper, *A Textbook on the Teaching of Arithmetic*, 248. New York, American Book Company, 1913.

[7]Myron O. Tripp, "Changing Ideals in Mathematical Instruction," *School Science and Mathematics* (1930), *30*, 928-29.

[8]Volney Ward, "A Study to Determine Whether Beginning Algebra Should Be Taught in the Ninth or Tenth Grade," *School and Society* (1931), *33*, 179-180.

[9]Jacob William Albert Young, *The Teaching of Mathematics in the Elementary and Secondary School*, 203. New York, Longmans, Green and Company, 1907.

[10]J. Herbert Blackhurst, *Principles and Methods in Junior High School Mathematics*, 35. New York, Century Company, 1928.

[11]John Phelps Everett, *The Fundamental Skills of Algebra*. Teachers College, Contributions to Education (1928), No. 324, 1-2.

[12]Charles Hubbard Judd, *Psychology of High School Subjects*, 107. New York, Ginn and Company, 1915.

[13]Edwin W. Schreiber, "A Study of the Factors of Success in First Year Algebra," *Mathematics Teacher* (1925), *18*, 65.

[14]E. R. Breslich, *Reconstruction of Secondary School Mathematics*. Doctor's Thesis, University of Chicago, 1926. 251 p.

[15]Virginia Wattawa, "A Study of the Errors Made in a Ninth Year Algebra Class," *Mathematics Teacher* (1927), *20*, 212-222.

[16]James Wilbur Hoge, *Type Difficulties and Errors Occurring in the Study of Algebra*. Master's Thesis, University of Chicago, 1927. 111 p.

[17]Wilbur Alden Coit, "A Preliminary Study of Mathematical Difficulties," *School Review* (1928), *36*, 504-9.

[18]T. L. McCuen, "Predicting Success in Algebra," *Journal of Educational Research* (1930), *21*, 72-74.

[19]Enoch D. Burton, *An Experiment in Grouping Pupils According to Ability in High School Algebra*. Master's Thesis, University of Chicago, 1925. 35 p.

[20]Claude Valentine Courter, *A Study of Factors Which Condition Success in Plane Geometry*. Master's Thesis, University of Chicago, 1925. 123 p.

THE DEVELOPMENT OF LEADERSHIP IN PROSPECTIVE TEACHERS

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School boards, state superintendents, and college presidents agree that teachers fail not because of lack of knowledge of subject matter or lack of methods in presenting subject matter, but because of their inability to adapt themselves to social conditions. Apparently many are not interested in becoming members of the social group in the community in which they find themselves. In reality they are interested, especially if they are the type from which real teachers are made; but because of lack of confidence, lack of knowledge and experience in how to go about bringing themselves into co-operative relationship with the community, they fail to make the adjustment.

It would seem that if the teacher training institutions gave to this type of work—namely, development of personality, development of community interests and relationships—the same impetus that they do to subject matter and methods, the student as he goes into the community would respond in this as he has already done in the field of subject matter.

The very nature of our public schools makes them the best active agents for leadership, and it is the teachers from whom the people may well expect a reasonable service in addition to their classroom work. They have an opportunity for leadership not possessed to the same degree by any other person in the community.

What is the secret of a teacher's successful leadership? First, are his personal qualities, power of initiative, courage, adaptability, tact, good judgment of situations, and industry. He knows his people and has a store of common sense. He leads best by discovering and helping to develop local leaders among the people themselves. He sees the situation as it is, visions it as it might be, and endeavors by example and suggestion to lead the people to better ways, to greater enjoyment, and appreciation in their everyday lives; and by so doing enables them to approach more nearly than they have done at present the best that their surroundings afford.

The urge toward leadership is stronger and more commonly distributed than is generally supposed. We lack leadership because we lack faith in the so-called common man. We use the same leaders over and over until they reach the point of diminishing returns. We assume that because a person has won success in some form he is destined to be successful in others.

Leadership in a democracy cannot be inherited—neither can it be purchased. The very nature of our Constitution prohibits these. Neither fortune nor

ancestry will suffice unless these be supplemented with initiative, courage, adaptability, sympathy, good judgment, and industry. The man who contributes the dollar may be more valuable as a leader than the one who contributes one thousand dollars. The leader's greatest service to his community comes when he finds in his community the men and women whom he may encourage to assume leadership. The community leader who is constantly doing things instead of getting them done can scarcely escape the danger of personal advertisement.

Yearly a great number of college students go as teachers into villages (200-1,000 inhabitants) or into open country communities throughout the nation. Considered from a cultural viewpoint the village and country community assume an important position in American community life. The school, the church, and the home are their chief factors. The child is their dynamic center. The character and personality of these go far toward the formation of American opinion and ideals. Here the teacher is looked upon as a leader and counsellor; and, if he is in sympathy with his people and has the courage to make a beginning he will find in his hands material that is worth while. The kind of community life which is here created is destined to play an important role in national affairs.

Among the many relationships of school teachers there is none that may bear more directly on their work than those they maintain with the parents of their pupils and with the community in general. The average adult citizen knows very little about our modern school, and his evaluation comes as a direct reaction to the way he is impressed by the ones who do its work. If he respects the teaching force, his opinion of the school very likely will be favorable. If for no other reason the community activities in which teachers engage are of the utmost importance.

Teachers who are most successful participate in worthy community activities, and this in turn generates a feeling of friendliness and goodwill that promotes rather than hinders the work within the schoolroom. Teachers who know their work, budget their time, and use it wisely, find time to engage in community life after the school work has been cared for.

The changed objectives of public school education which have come as a direct outgrowth of the newer philosophy of education are demanding of the teacher in a constantly increasing measure certain social-personal qualities such as leadership and fellowship, a spirit of co-operation, a sense of loyalty and responsibility, initiative and originality.

The development of any activity depends directly upon the exercise of it. Social qualities of the student are more readily developed through social-group activities for which little provision is now made by the formal curriculum of the school.

As has been said, the emphasis of the modern school is no longer placed upon the teacher's knowledge of subject matter alone, but also upon his ability to participate in, stimulate, and conduct extra-class activities. The success of the individual in the teaching profession will be determined in a measure by his ability to satisfy the demand for the development of desirable social-personal qualities of his pupils. Teacher-training institutions should recognize this newer philosophy of education and train and encourage their students in participation in extra-class social-group activities, thereby developing social-personal qualities in their prospective teachers. This surely is a worthy objective. Some of these activities may be listed as athletics, dramatics, student government, journalism, debating, orchestra, glee club, and religious organizations.

Comparative studies of activity and non-activity students at Colorado State Teachers College, 1918-1923, with selected groups attempted to answer the following: (1) Does the acquisition of desirable social-personal qualities require of the individual superior mental ability? (2) Does the individual who participates in extra class activity programs take part in such activities at the expense of the work of the classroom and the formal curriculum of the school? (3) Does the degree of success achieved by the individual in the teaching profession show a positive relationship to participation in extra-class social-group period? Does the student who is socially active during his college life secure the most desirable position and engage in the more advanced type of work in the profession? Does his work take him to the larger communities? Does he receive a larger compensation? Do those under whom he works estimate his ability in the profession higher than that of his classmate who during his college days devoted his time almost entirely to the pursuit of academic and professional courses?

In general from the research done in the above it is probably safe to conclude that:

1. Superior intelligence is not essential to participation in extra-class activities.
2. Participation in extra-class activities is not detrimental to the work of the classroom and the requirements of the formal curriculum.
3. The activity students after graduation tend to:
   (a) Secure more important positions and enter into the more advanced types of work in the profession.
   (b) Go to larger cities and towns.
   (c) Receive higher salaries.
   (d) Show greater interest in advanced training.
   (e) Possess greater ability to satisfy the demands of those under whom they work.
4. Differences in the degree of success achieved by the members of the two groups in the profession should not be accounted for to any great extent by apparent differences in mental ability.
5. Harmful influences which might grow out of the self-initiated activities of the student-group are negligible and the values resulting are highly important in the professional preparation of teachers.

On the basis of these findings teachers colleges in the interest of better preparation of teachers might profitably regard provision for participation in the extra-class activities of the school as an important element in the program of the teacher in training and the acquisition of social qualities as an objective of the educational program for the professional preparation of teachers.

Most people will agree with this study relative to the effect of extra-class activities that this type of work is indeed worth while in the development of students who participate. But too often it is found that it is the same group of students who are made active leaders in all activities. This is not desirable. To remedy this, personnel workers should help every incoming student to find himself in the new environment, locate his talents and special interests, and help him to make connection with the particular organization in which he will best be able to express himself, whether that be public speaking, dramatics, music, journalism, Y. M. C. A. work, etc. These organizations have faculty sponsors who can do much for the new student by creating a friendly environment in which he naturally feels at ease and is soon eager to do his part. Funds should be supplied whereby the dean of women can plan and carry out "all school" parties, teas, and receptions, to which all students come and feel at home because of the friendliness engendered by faculty members and upper classmen. Class organizations, clubs, etc., may assume responsibility for various school functions sponsored by the dean. This calls out leaders in various groups and distributes responsibility. Organizations should plan and carry out social gatherings within their own group, letting the responsibility fall to various members until everyone has had his opportunity. These activities in addition to interest and spice given to school life help develop personality and leadership among its students.

But what else can be done to develop interest and leadership among our students in our teacher-training institutions? There are courses within our curriculum that if pursued in the right manner under the guidance of broad-minded, forceful men and women will broaden the student's conception of life, will increase his interest in community, state, and national affairs, and will help him to realize the Fatherhood of God and the brotherhood of man. Such courses are: sociology, economics, history, philosophy, other sciences, and literature. Our teachers need to be so filled with zest and enthusiasm for the work that the students catch the spirit and go out to become "doers of deeds and not hearers only."

Activities should be provided whereby the student has an opportunity to live through real life situations. During a course in student teaching the student should be permitted and encouraged to assume responsibility. Often he feels it a privilege to do so. Some things that he may do after a conference with his supervisor are: to communicate with parents regarding the pupil's progress, his attendance, his need for home work; assist in preparation of school parties

to which the parents are invited, assist in receiving guests; assist in planning group projects; plan for special days, arrange for birthday parties of the group; sponsor book clubs, dramatic clubs, and nature study clubs.

In student teaching courses the supervisor has a rare opportunity to lead the student into wider and fuller concepts of his work; she can encourage; she can make him feel his worth; she can develop within him a feeling of responsibility and a desire to do. She can inspire him with lofty ideals of service. The student as a teacher should be made to feel himself an integral part of the system and given an opportunity to share in its social and professional life. Attendance at the monthly Parent-Teachers' Association should be encouraged. Occasionally the student should have an opportunity to provide a portion of the program. He can plan and arrange for assembly programs to which other rooms are invited; he can organize book clubs and nature study clubs and plan for hikes and picnics. In other words, he should be an active member of all departmental organizations. His every spark of endeavor and initiative should be safeguarded and nurtured. Associated closely, as a course in student teaching permits, with a "master artist" teacher, the student's personality develops and unfolds in proportion as the atmosphere is friendly, sympathetic, and dynamic.

There is everywhere increasing opinion that preparation for citizenship and the other social responsibilities is the most vital objective of the schools of a democracy. It is from this point of view that the disservice of the traditional curriculum is becoming most apparent. Great changes have come into the curriculum of our elementary and secondary schools. What seem to be needed at the present time are similar changes on the college level where prospective teachers may be trained to go out into elementary and secondary schools carrying the ideals of social service not only to America's childhood but to her adult population as well. To this end educators are concerned with and engaged in the construction of curriculum, reorganization of subject matter, and research. This shows a spirit of dissatisfaction with things as they are, and an earnest attempt especially on the part of faculties of teacher-training institutions to meet and face conditions of a changing world as is this of today.

INFLUENCE OF LENGTH OF STUDY PERIOD ON ACHIEVEMENT IN ENGLISH

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Most experiments in the field of the Psychology of Learning tend to indicate that it is appreciably more satisfactory to use many short periods of work, study or practice rather than a few long ones. In fact, this principle has come to be considered so indubitable that it has prompted some commentators such as Pyle to generalize in ways such as the following: "What practical advice should be given to teachers who must determine and direct the practice of children? The practice periods of children should be short, and in most cases, once or twice a day. . . . By 'short,' we mean five, ten, fifteen minutes, depending upon the nature of the learning and how fatiguing it is."[1]

It was the purpose of this experiment to go into an actual school situation, rather than a formal laboratory, and check on certain generalizations such as those represented in the quotations just taken from Pyle. That there may be a difference in the ordinary school and formal laboratory situations is quite obvious to anyone familiar with them. In the formal laboratory experiment apparatus or materials are provided or prepared before the period of work begins; the person, or group, is put in a preliminary state of readiness before each period of work; there is a "Ready, go!" signal which precipitates the individual or group into the work without delay; there is practically no lost motion or "warming up" or wasted effort; a ten-minute work period, for example, means ten minutes of actual work on the problem at hand. In the ordinary school study period, though, most of these conditions do not prevail. The period of preparation necessarily enters the period assigned to study; both a muscular and mental readiness must usually be attained after the onset of the so-called study period. Then, further, in the formal laboratory experiment one can work consistently until he is given a "Stop!" signal by an outside experimenter; there is no need to draw together the threads of the work; there is no necessity for finding a logical place at which to stop. Again, though, it is quite evident that almost the reverse is true as regards a child's study period in school. It would appear, then, that there may be a danger in attempting to

[1]Pyle, W. H., The Psychology of Learning, p. 48. Warwick & York, 1921.

generalize for the school from data established in the formal laboratory, a danger which has not been recognized by all experimenters.

In this experiment a ninth-grade class of twenty children was chosen. The class was divided into four groups of five children each. In so far as practicable these four groups were equated around their respective points of central tendency on the basis of the two entire preceding years' work in English. In view of the fact that this experiment was concerned with a problem in English it was probably more desirable to equate the groups on the basis of their achievements in English than on the basis of some so-called intelligence test. The groups will be referred to as Groups I, II, III, and IV.

Each student spent 200 minutes in study periods. Thus the total amount of time allotted to the study of the assignment was the same for every student of every group. Group I studied 10 minutes at a time, or had 20 periods of 10 minutes each. Group II had 10 periods of 20 minutes each. Group III had 6 periods of 30 minutes each and a final period of 20 minutes. Group IV had 5 periods of 40 minutes each. Group I studied for 10 days, one period a day, and on the eleventh day Group II began; Group III began on the fourteenth day, and Group IV began on the sixteenth day. As a result of the use of this stagger system of starting the groups it was possible for all groups to finish at exactly the same time. Thus there was a constant interval for all between the end of the study periods and the test on that which was studied. This was an interval of three days, or from the end of the period on Friday to the beginning of the period on Monday.

The material studied was Longfellow's "Evangeline," New Edition, Riverside Literature Series. This has both a "Historical Introduction" and "Study Helps" for student usage. All books were given out and taken up by the teacher at the beginning and end of each child's study period each day, with no study being carried on outside the prescribed and timed study periods.

No suggestions or helps were given to the students at any time after a common period of orientation that was given in the beginning. In this common pre-experimental period the teacher told the students that they were going to take up the study of a new unit of supplementary reading, "Evangeline," and that this new unit would be conducted somewhat differently from previous ones. The students were told that they would spend a definite, prescribed number of minutes *in study* each day and that this study would be independent of the teacher. Futher, it was announced that, as usual, a test would be given upon the completion of the study unit. Next, the teacher read to all the students the high points in the life of Longfellow as found in Halleck's "History of American Literature," and called particular attention to pages 228 and 229 of this text on which is found an account of the incident which caused Longfellow to write "Evangeline."

A thoroughly objective test was prepared in accordance with usual procedure on these units. Eighty-five was the highest possible score on the test. Though there may be some question as to the validity of this test it must be remembered that in this experiment an attempt was made to test certain hypotheses under as nearly normal schoolroom conditions as possible, and that there are countless assignments which a teacher must make and numerous tests which she must give for which there are not now and probably never will be appropriate standardized examinations. In such cases, which are the majority, to be sure, the teacher must rely on the best measures which she can devise.

A review of Table I makes it evident that the averages of the four groups were not identical either as regards the scholarship records which they brought to the experiment or in the scores which they made as a result of their study. In order to make comparisons more direct these averages are reduced into quartile and standard deviation units or scores.

TABLE I

SUMMARY OF SCORES MADE BY INDIVIDUALS AND GROUPS

Group	Student	English Average—2 Years			Evangeline Test Results		
		Individual Score	Group		Individual Score	Group	
			Median	Mean		Median	Mean
I	A	96	83.0	80.0	51	51.0	47.8
	B	88			64		
	C	83			65		
	D	71			31		
	E	62			28		
II	F	95	80.0	77.2	57	46.0	42.4
	G	86			46		
	H	80			40		
	I	70			46		
	J	55			23		
III	K	98	84.0	79.6	63	61.0	51.2
	L	90			61		
	M	84			42		
	N	74			68		
	O	52			22		
IV	P	96	82.0	82.8	65	60.0	56.2
	Q	92			62		
	R	82			60		
	S	76			49		
	T	68			45		
Mean		79.90			49.40		
Standard Deviation		13.31			14.36		
Median		82.50			50.00		
Quartile Deviation		10.25			10.75		

TABLE II

GROUP MEDIANS AND MEANS EXPRESSED AS QUARTILE (Q) AND STANDARD (σ) DEVIATION SCORE

Group	English Average for 2 Years		Evangeline Test Results	
	Medians as Q's	Means as σ's	Medians as Q's	Means as σ's
I	+.049	+.008	+.093	−.111
II	−.244	−.203	−.372	−.446
III	+.146	−.023	+1.023	+.125
IV	−.049	+.218	+.930	+.473

From Tables I and II, combined, two things probably stand out. The first of these is that no one of the four types of periods could produce a sufficiently potent effect on individual achievement to counterbalance the English aptitude of the students, if it can be assumed that the grades made in the course of two full years of English furnish a fairly satisfactory index for this aptitude. In general, the students who entered the experiment with high scholarship records tended to emerge with high records, and those who began with low records tended to finish with low records, irrespective of group placements. This is testified to by a coefficient of correlation of .80 between beginning averages and Evangeline test scores. Naturally, there is not a perfect, or necessarily near perfect, relationship in this respect as regards each individual's records, but the principle does appear to hold for the group taken as a whole.

The second point of interest in these tables is that the 30- and 40-minute periods, rather than the shorter 10- and 20-minute periods, enjoy any superiority which exists, and of these the 40-minute study period appears to be more desirable than the 30. Table II shows that the median of Group I on the beginning averages was .049 of a quartile deviation above the total group median and that the median on the Evangeline test was .093 Q's above the total median for the test. This would indicate that Group I did .044 of a quartile deviation better on the Evangeline test than would have been expected in view of its beginning median. At most this difference of .044 is negligible and we see its true instability when we transfer to the mean and standard deviation scores. Here it will be noticed that the group entered the experiment .008 standard deviation units above the general mean and finished the experiment .111 standard deviation units below the general mean. Such results are too equivocal to enable one to draw definite conclusions of any type. Group II, with a 20-minute period, began as the most poorly prepared group, either method of measurement, and ended as the poorest trained without question. It is significant, though, that this group ended relatively lower than it began. In fact, it lost in efficiency either .128 quartile deviation units [(−.372) − (−.244), Table II] or .243 standard deviation units [(−.446) − (−.203)].

Group III, with 30 minutes, shows the first consistent gain from time spent. As a result of its study its position was raised from +.146 Q's to + 1.023 Q's, or from —.023 σ's to + .125 σ's, an increase of .877 quartile deviation units or .148 standard deviation units. Though these two methods of measurement disagree as to the amount of change which took place during the study they certainly do not disagree as to the direction of the change. The conditions thus noted for Group III are seen more clearly for Group IV, with a study period of 40 minutes. Its Q-score standing was raised from — .049 to + .930, an increase of .979 quartile deviation units, and its sigma-score (σ) standing rose from + .218 to + .473, a rise of .255 standard deviation units in efficiency.

SUMMARY AND CONCLUSIONS

1. No type of study period herein considered can be taken to offset the general aptitudes with which students approach their study problems.

2. Contrary to certain conclusions which have been drawn from rather formal laboratory experiments, the shorter study (work) periods were not of greater value in learning than the longer ones. On the other hand, since the 30-minute period proved to be more desirable than either the 10- or 20-minute periods, and since the 40-minute period was preferable to the 30-minute period, it seems appropriate to ask whether a 50- or even a 60-minute period would have proved to have been still more advantageous than any of these which were used in this experiment. The study then would appear to have created the additional problem of establishing the upper limit or point beyond which one can expect to obtain diminishing returns from time spent in the actual classroom study period situation.

3. There is a very real need for additional experimentation in the actual classroom in order to determine what are the best principles by which to be governed in study time distribution. These experiments should be conducted at various mental and scholastic maturity levels and in various curricular fields. In all events, the laboratory should be the classroom.

PROBLEMS OF HIGHER EDUCATION AS FOUND IN PERIODICAL LITERATURE

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In the Peabody Journal of Education, July, 1931, an article appeared showing adverse criticisms of higher education as found in recent periodical literature. This article not only pointed out the criticisms published during the three-year period, 1927, 1928, and 1929, in thirty-seven publications, but also indicated that practically all of the criticisms were made by people engaged in school work in the higher educational institutions. This means that most of the criticisms offered are self-criticisms. Since self-criticism is usually a forerunner of improvement, it seems worth while to see if the problems of higher education are being recognized by those employed in our universities and colleges.

Hence, the purpose of this article is to show what the problems of higher education are as expressed in periodical literature during the same three-year period, 1927, 1928, and 1929; to determine how frequently these problems were presented; and to indicate the occupation of the people who have pointed out these problems.

In order to answer these questions, a review was made of sixteen general literary magazines and twenty-one professional magazines, journals, bulletins, or yearbooks of educational organizations for the three-year period 1927 to 1929. (The publications used in making this study are listed in the Peabody Journal of Education, July, 1931, page 4.)

The review of this literature was very carefully made. It was not considered sufficient to look through the index of each magazine used and in this way locate the articles that presented problems of higher education because it was found that the title of an article is by no means a sure index to its contents. Therefore, each issue of these publications was examined page by page in order to reduce errors of omission to a minimum. As a further check upon the accuracy of this review the publications were examined a second time by another person. In making this study of the literature, each problem found was listed on a separate 3 by 5 card showing the author, the title of the article, the name of the publication, the volume number, the date of issue, and a brief statement of the problem. Extreme care was taken to include only the meaning that the writer intended to convey. In most cases exact quotations were used in stating the problem which the writer presented.

As a result of this study 40 problems of higher education that may be considered distinct and separate were found in the 37 publications reviewed, with

a total frequency of 132.* The range of frequency was from 1 to 16. Of the forty problems the four most frequently mentioned are: (1) How should college students be selected? (2) What are the merits of different teaching methods in college? (3) Should practice teaching and supervision of college teaching be provided for graduate students preparing to become college teachers? (4) How can colleges best provide for individual differences of students? Table I gives a complete list of the problems found and the frequency of occurrence of each.

TABLE I

PROBLEMS OF COLLEGE TEACHING FOUND IN PERIODICAL LITERATURE AND THE FREQUENCY OF OCCURRENCE OF EACH PROBLEM

Problem	*Frequency*
1. How should college students be selected?	16
2. What are the merits of different teaching methods in college? Should there be less formal teaching and more informal teaching, such as honor courses and the tutorial system? Should there be less lecturing and more discussion, less laboratory and more lecture-demonstration?	9
3. Should practice teaching and supervision of college teaching be provided for graduate students preparing to become college teachers?	7
4. With the increasing enrollments, how can the colleges best provide for individual differences of students?	7
5. What should be the size of the college class?	6
6. What methods should be used to improve college teachers in service?	6
7. How are the proper types of students who are to become college teachers to be selected?	6
8. How is a curriculum that will include professional training for those preparing to become college teachers to be provided in the graduate school?	6
9. What is the best method for measuring the college teacher's ability to teach?	5
10. What are the best methods for the orientation of college freshmen?	5
11. How should expert teaching be properly recognized?	5
12. What extra-curricular activities should there be in college, and under what regulations should they be carried on?	5
13. How should colleges deal with student mortality?	4
14. How can higher scholarship and the proper attitude of students toward their college work be secured?	4
15. What constitutes a reasonable teaching load in college with reference to the number of hours and the number of students?	3
16. What should the junior college curriculum include, and what should be the qualifications of junior college teachers?	3
17. How are textbooks and materials on methods to be provided for the training of future college teachers?	3
18. How can measures of efficiency of higher educational institutions be made qualitative rather than quantitative?	2
19. In order to make good teaching possible, how can extra-curricular activities of the college teacher be reduced to a minimum?	2
20. What should be the procedure for determining the rank of high school graduates who apply for admission to higher educational institutions?	2
21. What changes should be made in the content and time required for curricula of various types?	2
22. How much faculty participation should there be in the educational policies of the institution, and how is co-operation between the department of education and other departments in liberal arts colleges to be secured?	2

*Problems dealing with athletics and school finance were not included in this study.

TABLE I—(Continued)

Problem	*Frequency*
23. How can closer articulation between educational units be realized?	2
24. How much research in actual classroom teaching in colleges and universities should be attempted, and how can this best be accomplished?	2
25. How much academic freedom should there be in the college, and how is it to be maintained?	2
26. What method should be used to teach students how to study?	2
27. How can greater uniformity in titles of courses be brought about in higher educational institutions?	1
28. How valid are the so-called new-type tests, and how much should they be used?	1
29. How much use should be made of tests and measurements as an aid in determining student achievements and difficulties in college?	1
30. How is the instruction of Ph.D. candidates to be kept on a seminar basis rather than on a lecture basis?	1
31. How much student participation should there be in the policies and government of the institutions?	1
32. How are social, vocational, and educational guidance to be best carried out?	1
33. What is the psychology of the college student?	1
34. What constitutes adequate knowledge of subject matter, and how can it be determined whether or not the college teacher has this knowledge?	1
35. What constitutes a crowded college?	1
36. How can college marking systems be improved?	1
37. What plan should be used in reporting masters' and doctors' studies so that they may be fully utilized?	1
38. How is the reading ability of college students to be improved?	1
39. How is the personality of the teacher to be measured?	1
40. What plan governing leave of absence in higher educational institutions should be adopted?	1
Total number of frequencies	132
Median frequency of mention	2

In order to see how these 132 problem frequencies are distributed in relation to some of the larger and broader phases of higher education, the problems were thrown into eight groups as follows: (1) problems of student personnel, (2) problems of the curricula, (3) problems dealing directly with instruction, (4) problems concerned with the training of college teachers, (5) problems of

TABLE II

PROBLEMS OF COLLEGE TEACHING GROUPED UNDER EIGHT DIVISIONS AND THE FREQUENCY OF OCCURRENCE OF PROBLEMS IN EACH CLASSIFICATION

Classification	*Frequency*
Student personnel problems	30
Curricula	18
Instruction	17
Training of college teachers	14
Administrative and supervisory policies	13
Standards and standardizing policies	13
Measurement and recognition of good teaching	10
General and miscellaneous	17
Total	132

college administration and supervision, (6) problems brought about by standards and standardizing policies, (7) problems that deal with the measurement and the recognition of good teaching in college, and (8) problems of a general and miscellaneous nature that could not be rightly placed with any of the other groups. Table II shows the frequency of problems under these eight divisions.

When further study of this list of problems was made to determine the work of the writers, it was found that 84 per cent were presented by persons engaged in college or university work, and 4 per cent by persons engaged in school work below the college level. Ninety per cent of the problems were found in professional literature and 10 per cent in general literary magazines. These data in more complete form are shown in Table III.

TABLE III

TYPE OF MAGAZINES IN WHICH PROBLEMS OF COLLEGE TEACHING WERE FOUND AND THE TYPE OF WORK WHICH THE WRITERS ARE DOING

Type of Magazine and Type of Work of Writers	*Per Cent of Problems*
TYPE OF MAGAZINE	
Professional Literature	90
General Literary Magazines	10
TYPE OF WORK OF WRITERS*	
College or University Work	84
School Work Below College Level	4
Not in School Work	0.7
Editorial Work	10.6
Anonymous	0.7

CONCLUSIONS

1. The results of this study are not contrary to expectations in that the number of problems presented in periodical literature is rather large. However, many of the problems were found only once or twice in the 37 publications covering the three-year period. This seems to indicate that these problems are of minor importance, or if they are important, that most of the writers for some unknown reason do not care to discuss them, at least not in printed form.

2. Student personnel problems and problems of the curriculum and instruction seem to be most prominent and most important according to the number of times they occur in the literature.

3. It appears that *the proper training of college teachers* is coming to be recognized as an outstanding problem of the higher educational institutions. This seems to be significant when one realizes the steps that have been taken to provide for the proper training of elementary and secondary school teachers. For years the requirements for elementary and secondary teachers have been very specific as to both the amount and the kind of training they must have

*Type of work in which three of the writers are engaged could not be found. Judgment concerning their work was formed from the title of the article and the type of magazine.

before being qualified to teach, while little or nothing has been done until recently in this connection with reference to college teachers. It would be interesting to know how frequently the proper training of college teachers was mentioned as a problem in this same periodical literature over a three-year period a decade ago.

4. More than 80 per cent of the problems in the publications were presented by those engaged in college or university work. The same was found with reference to criticisms of higher education. This is indeed a hopeful sign and means that improvement should soon be forthcoming. It further means that the problems of higher education are being recognized by those people who must attack and solve them when and if they are solved.

EDITORIALS

FROM HIM THAT HATH NOT

Two hundred million dollars worth of education: this represents the shortage in provision for elementary school children in the sixteen southern states in 1930-31. The article by Dr. Dawson in this issue details the shortage and defines the standard against which it is figured: a standard, by the way, which is actually reached by cities, and approximated by some states.

The total is staggering, but no less so than the tragedy which such a shortage implies. Short terms, ignorant teachers, poor buildings, little supervision, few books, and lack of teaching equipment: these have been known and somewhat accepted for some time. Too often our thought stops there. The tragedy lies in the lives of the children. Youngsters start out with high hopes and great expectations. Anxious mothers and hard-working fathers get the children ready for school. Little boys and girls trudge long distances for an education. At the end of the journey they find barren and dilapidated buildings with neither inspiration nor opportunity within them. When their few dreary days of "schooling" are over they go on into lives that are as barren and uninspired as the schools which they attended. The blight of ignorance and superstition spreads itself abroad. Occasionally this manifests itself in some such form as trouble in the coal fields, the flaming of a feud, or the fury of a mob. For the most part it persists as a dull sort of misery, an apathetic acceptance of life as lived of necessity in a "vale of tears and sorrow." The possibility of a full life, richly lived, is conceived only as a possibility in a vague "heaven" of the hereafter. Heaven on earth is denied these children.

Meanwhile, roads are built and legislators are paid. The budgets are balanced by taxes on the poor, and by rigid "economy" in school appropriations. Shortages are tided over by holding up the elementary school funds. Teacher-training institutions find themselves fighting for their very existence and the right of children to be well taught. Shorter terms and poorer teachers are provided for the elementary schools, and the buildings approach dissolution more nearly. The struggle for freedom from the restraints of ignorance hesitates and staggers.

Verily, "from him that hath not" is being taken even "that which he seemeth to have."

N. F.

KEEP FAITH

It is possible that there will emerge from the current crisis a menace of such major importance as to transcend those other ills which are on every tongue. Surely humanity in its long quest for Good has met with some success, discovered some fragments of truth, found some fleeting glimpses of its

own opportunities and obligations. Around these humanity has built its institutions. Into the development of these institutions there has gone, to be sure, much material that is transient, ephemeral. It is too much to expect that we have available enough Truth out of which to make a *complete* institution, so we use much that is frankly experimental. If in our multifold social experiments we find one part of Good in a million parts of experiment there is due warrant for the wastage of the remainder. There is victory in the one permanent part so achieved. We incorporate it into the institution and proceed to further experiments. But the accumulation of Good is so *slow* that there exists in any human institution a great body of imperfection, of material obviously tentative, and it is this which first meets the eye in a crisis whose basis is economic. In such times it is our nature to search for defects in our institutions and to accuse these of our afflictions. In our more violent moments we are likely to condemn not the imperfections of our institutions, but the institutions themselves.

And that is the menace. All the Good we have is built into our institutions. Destroy those and only our negative achievements remain. Only the stupid have held our institutions, all or any of them, to be error proof. Only the stupid have attempted to conceal error once discovered. Human development is largely conditioned upon the recognition and elimination of error. Colossal disaster, however, is courted by those who finding error in an institution seek to destroy the institution. Let humanity keep faith in those institutions in which is objectified all the Good which humanity yet has reached.

A. L. C.

THE NEW BOOKS ON OUR SHELVES

[The reviews, most of them signed, are by appropriate members of the Faculty of GEORGE PEABODY COLLEGE FOR TEACHERS. Our limited space necessitates concise notices—brief, pointed, thoughtful comments, without elaboration.]

The Influence of Different Stimuli Upon Preceding Bonds. By J. M. STEPHENS. New York City: Teachers College, Columbia University, 1931. Pp. iii + 83.

This study reviews briefly different experiments and theories concerning how errors are eliminated in certain learning processes and how successful responses are "stamped in." Experiments are apparently carried out with the purpose of justifying Thorndike's "law of effect" and of establishing a mechanistic basis to supplement the retroactive effect of "pleasure" or "pain" as stated by Thorndike. These two purposes seem to be contradictory. Neither problem is, of course, new. The experiments carried out by the author are somewhat crude in certain respects and, for certain kinds of learning, unsatisfactory, as the author seems to appreciate; but the problems are not easy, though they are important. J. P.

The Training of Negro Teachers in Louisiana. By JANE ELLEN MCALLISTER. New York: Bureau of Publications, Teachers College, 1929. Pp. vi + 95.

This study shows the present facilities for training Negro teachers in the State of Louisiana. The deficiencies of the present efforts in Louisiana are shown by a comparison of this work with that of two other southern states. Measures for improvement of the Louisiana training program for Negro teachers are suggested and a financial program covering a period of four years is outlined with the hope that the State Department will adopt it. U. W. L.

The Validity of Intelligence Test Elements. By HARRIET MAY BARTHELMESS. New York City: Teachers College, Columbia University, 1931. Pp. 3 + 91.

This is a doctorial dissertation dealing with the relative success of various statistical methods used in the comparison of intelligence test elements as to their several degrees of validity. It will be of value as a preliminary step to investigators who are constructing complex intelligence tests. J. P.

Lists of Essential Apparatus for Use in High-School Sciences. By T. C. HOLY AND D. H. SUTTON. Columbus: Ohio State University, 1931. Pp. v + 32.

A study of apparatus lists and ranking of items desired for general science, biology, physics, chemistry, according to the checking of a host of teachers. A fabular feature permits adaptation to any budget. H. A. W.

Bonding Versus Pay-As-You-Go in the Financing of School Buildings. By DON L. ESSEX. New York City: Teachers College, Columbia University, 1931. Pp. v+ 101.

A very practical study of a problem which is vital to those responsible for the administration of schools. The author has evaluated the various proposals presented for the two methods of financing capital outlay expenditures in a most scholarly manner. The study will be of real value to all those concerned with this problem. Especial mention should be made of the valuable bibliography and appendix. W. D. C.

Birds of Arkansas. By W. J. BAERG. Fayetteville: University of Arkansas, 1931. Pp. 197.

This book summarizes the studies of Baerg for the last ten years. It will be found most useful for elementary and high school teachers in their nature work. J. S. M.

The Teaching of High School Chemistry. By J. O. FRANK. Oshkosh, Wisconsin: J. O. Frank and Sons, 1932. Pp. vi + 285.

Distinctly the most comprehensive book in this field, containing nineteen practical chapters. Not only is the philosophy of science teaching presented in a manner that would do credit to any text on methods, but the lists of books, materials, visual aids, and other supplements are up-to-date and comprehensive. Sage advice to young teachers is particularly helpful. H. A. W.

Physiology of Exercise. By FERDINAND AUGUST SCHMIDT AND OTHERS. Philadelphia: F. A. Davis Company, 1931. Pp. iii + 216.

A worth-while book for physical educators. A. D. B.

Episodes in the Life of George Washington. By A. J. Cloud and Vierling Kersey. New York: Charles Scribner's Sons, 1932. Pp. x + 226.

A series of twenty-seven episodes, each complete in itself, but in related sequence which picture vividly the man Washington. The book is interestingly written and the episodes well chosen from standard sources. It is particularly suitable for children in the upper grades, but will prove interesting to older persons. N. F.

Factors Affecting the Elimination of Women Students. By Ruth Vesta Pope. New York City: Teachers College, Columbia University, 1931. Pp. iii + 110.

A study of six liberal arts colleges to discover conditions under which women students were eliminated before graduation. The author attempts to analyze the environmental factors in the colleges studied and the circumstances immediately attendant upon the withdrawal of 247 students. Withdrawals range from 14 per cent to 72½ per cent, with an average of 48 per cent for the six colleges studied. "At the present time the liberal arts college is spending nearly 50 per cent of its varied and total resources on students who will not be graduated; the withdrawal of the majority of these students may be capable of prediction."

The author proposes nine recommendations, the last of which is that colleges with large two-year groups consider the advisability of becoming a senior college or of giving recognition to the needs of the two-year group. D. S. C.

The Supervision of Rural Schools. By C. J. Anderson and I. Jewell Simpson. New York: D. Appleton and Company, 1932. Pp. xiii + 467.

Distinctly a book for those who supervise elementary schools. The principles presented are carefully chosen; and the illustrations, selected from rural school practice, are copious, lucid, numerous, and illuminating. Of the five parts into which the book is divided, four are especially concerned with rural schools. Part four, "Promoting the Professional Growth of Teachers," is useful for urban as well as rural supervisors.

This book will prove of great value to rural supervisors and to those preparing for such work. N. F.

The Acceptable Uses of Achievement Tests. By Paul R. Mort and Arthur I. Yates. New York: Columbia University, 1932. Pp. 85.

A simple, practical manual for teachers with limited experience in the use of standardized achievement tests. N. F.

Enriching the Curriculum for Gifted Children. By W. J. Osburn and Ben J. Rohan. New York: Macmillan Company, 1931. Pages xiv + 408.

The book is divided into two parts,—Part I, Principles and Policies; Part II, Materials and Methods. In Part II a great deal of interesting and suggestive material is collected and presented. The discussion of principles in Part I is practically devoid of citations or references of any kind. Some of the opinions expressed seem to be the personal opinions of the authors. N. F.

Great Dipper to Southern Cross. By. E. H. Dodd, Jr. New York: Dodd, Mead and Company, 1930. Pp. xii + 332.

A breezy account of a cruise in the South Seas of a group of young men. The book is interesting and informing. It is particularly well adapted for high school boys. N. F.

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A MESSAGE TO SCHOOL EXECUTIVES

Children should not pay the penalty of lessened educational opportunity because of economic ills

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Evaluation and Improvement of Teaching. By CHARLES W. KNUDSEN. Garden City, N. Y.: Doubleday, Doran & Company, 1932. Pp. x + 538.

A clear-cut presentation of principles and techniques involved in evaluating teaching and in working for its improvement. The blending of practice and theory, together with the copious use of well-chosen illustrations, makes this an excellent handbook for the teacher who is trying to grow professionally, as well as a text for teachers and supervisors in training.

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Supervisors, principals, and teachers will find this book distinctly useful. N. F.

Introducing Education. By J. HERBERT BLACKHURST. New York: Longmans, Green and Company, 1932. Pp vix + 319.

Clearly written and simple in organization, this book has a real place in the first year of professional training of teachers, or in a survey course for academic junior college students. The number of topics considered is limited, but they are well chosen. N. F.

An Introduction to Education and the Teaching Process. By JESSE E. ADAMS AND WILLIAM S. TAYLOR. New York: The Macmillan Company, 1932. Pp. x + 668.

A comprehensive presentation of teaching, administration, and philosophy. The treatment is simple and suggestions are clear and concise. Standard sources are used when available, and these are supplemented by personal opinion of the authors. The book should prove helpful to inexperienced teachers. N. F.

The Enrichment of the English Curriculum. By. R. L. LYMAN. Chicago: University of Chicago, 1932. Pp. viii + 251.

A remarkable report and interpretation of studies and experiments in regard to the English curriculum. The reports are clear and the interpretations illuminating. The bibliography alone is well worth the price of the monograph. All teachers of English will find this of great assistance, and those who have to do with the making of English curricula will find here in convenient and usable form much essential material. N. F.

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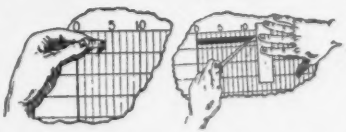

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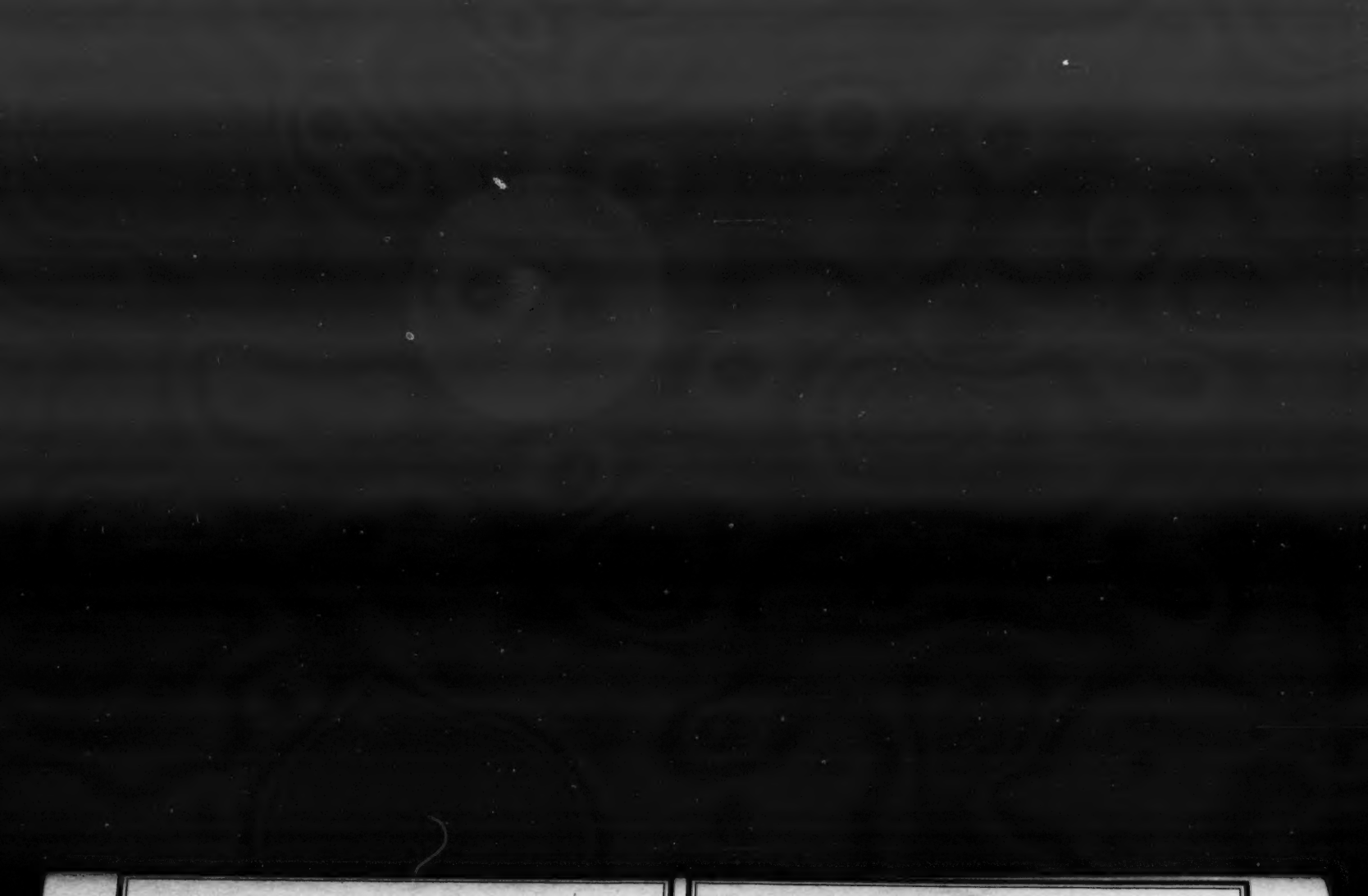
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